medical education and medical care

INTERACTIONS and PROSPECTS

Edited by
CECIL G. SHEPS
GEORGE A. WOLF, JR.
and
CARLYLE JACOBSEN

Report of the
Eighth Teaching Institute
Association of American Medical Colleges
Hollywood Beach, Florida, November 1-3, 1960

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Edited by CECIL G. SHEPS, GEORGE A. WOLF, JR.,
and CARLYLE JACOBSEN

Editorial coordination by E. Shepley Nourse

Division of Basic Research
ASSOCIATION OF AMERICAN MEDICAL COLLEGES
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Organizational Roster
for the 1960 Teaching Institute

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Preface

> Nature has this work to do: to shift and to change, to remove from here and to carry there. All things are change, yet we need not fear anything new.—MARCUS AURELIUS: *Meditations*

In the days of the ancient philosophers, men were keenly aware of the ever-changing nature of the physical world, an evolution which was, however, largely beyond their comprehension or control. In the complex, swiftly moving times in which we live today, the changes that concern us most are, to a considerable extent, self-wrought, and reflect in large part the incredibly rapid advances in our knowledge of the natural and physical sciences, advances brought about by man's innate curiosity and perseverance.

This knowledge of science, applied to medicine, provides the warp of the fabric of medicine; through it are woven the variously colored threads of the physician's art. The completed cloth which results from this process of weaving is ultimately formed into the protective garment of medical care. And just as fashions of dress have changed with the passage of time, so have the patterns of medical care changed.

It would be anticipated that acceleration of the rate of change in one facet of the over-all process of medicine should lead to a comparable acceleration in other areas; and, indeed, this has been the case. Consequently, in the relatively short span of years since the end of World War II, medical science, medical education, and medical care, each so directly related to the other, have been in a state of active ferment.

It was his keen perception of this situation that led Dr. George Packer Berry to call for the series of Teaching Institutes that began in 1952; these "national faculty meetings," held under the auspices of the Association of American Medical Colleges, have provided opportunity for those responsible for the education of the nation's physicians to focus systematically on the several components of the fabric of medicine. First, there came three Institutes concerned with the sciences basic to medicine—the warp of the cloth. The medical student was the subject of the next two Institutes, and here the discussions were enriched by the participation of the behavioral scientists whose contributions to the woof have so greatly strengthened medicine.

The two subsequent years followed, in orderly fashion, with an examination of clinical teaching, based as it is on that which went before. Then, in 1960, a new phase of Institute history began. The plan called for three Institutes focused respectively on medical care, on medical research, and finally on the profession as a whole. It is the first of these three, the Institute dealing with medical education and medical care, that forms the substance of this volume.

Because medicine encompasses such broad areas of man's knowledge, and because it is so intimately involved in every aspect of human behavior, it is not surprising that the logarithmic growth in the body of knowledge and the ever-increasing problems of its application should have necessitated major changes in medical care. Dr. Berry's statement in his foreword to *Readings in Medical Care* is pertinent: "The rapid changes in our industrial society and the equally rapid changes in medical science mean that the framework and content of medical care and health service will inevitably have to change."[1] And if tomorrow's physicians are to be prepared to serve society most effectively, and in the context of society's expectations and demands, the medical schools must obviously be concerned with broad aspects and implications of medical care.

Change in the social order rarely comes easily and without complications. Yet few would argue with the desirability of effecting the solution of a given problem by careful analysis and definition, followed by critically evaluated experimentation and the subsequent formulation of a new and better plan. Evolution rather than revolution is usually preferable as a means of achieving change—too often in man's history the latter course has been chosen and the desired end has been achieved only at excessive cost.

The 1960 Teaching Institute represented an attempt, and in my view a laudable and effective one, to approach a vital issue thoughtfully and in depth. Dr. Carlyle Jacobsen, the Institute's able chairman, and his colleagues devised a format that provided for the examination and discussion of pertinent facets of the Institute topic: medical education and medical care. The interactions among scientific and social factors were emphasized, and their import for the future were discussed. One need not describe in detail the various papers that were presented at the Institute, for they are all reproduced in this book within the context broadly conceived by the 1960 Institute editorial committee.

In general, it is simpler to preserve the *status quo* than to alter it. Because the quality of both medical eduaction and medical care in the United States is good, there are those who maintain that it is "good enough." Hawthorne recognized this tendency to resist change, even for the better, when he wrote in *The House of the Seven Gables*, "The happy man inevitably confines himself within ancient limits." Still he was aware of the genesis of progress, for he also wrote, "The world owes all its onward impulses to men ill at ease."

It is precisely because thoughtful men have been ill at ease about the *status quo* in medicine that the Teaching Institutes in general, and this one in particular, have come about.

Many observers have called attention to the increasing concern of our citizenry with health. The provision of health care of an even better quality

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[1] Committee on Medical Care Teaching (eds.). *Readings in Medical Care* (Chapel Hill, North Carolina: University of North Carolina Press, 1958), p. v.

and greater effectiveness than is presently enjoyed in most areas of the country is an obligation the medical profession must accept.

Looking back over the past century, one sees that medical care patterns have undergone profound changes and that, to a major degree, these changes have clearly reflected the growth of medical knowledge and the continual improvement in the education of the physician. From the days when medicine was almost entirely practiced by an individual physician, dealing with an individual patient in his home, we gradually moved to an era wherein the hospital assumed and has continued to carry an increasingly dominant role in the care of the sick. With this transition, the character of the hospital itself has changed steadily and so has the pattern of the diseases that account for the majority of hospitalizations. The physician's dependence on hospitals, on laboratories, and on other physicians with specialized skills has grown apace. At the same time, rapid advances in many forms of therapy have been responsible for new emphasis on the ambulatory care of patients with illnesses that formerly caused them to be hospitalized.

Concomitantly, changing patterns in medical practice such as the development of group clinics, the lengthening of life expectancy, and the higher costs of care have brought economic factors into prominence. It must be remembered that large-scale hospitalization and medical care insurance programs are relatively recent phenomena. They have been developed to meet needs resulting from the changing character of our society and from the expectations and demands of our citizens. Since, however, the inventions of man are usually imperfect, it is not surprising that thoughtful men are still ill at ease; hence, there is a need and a place for explorations such as those which constitute the basis for this book.

It would be far too lengthy to list here the many individuals who contributed to the planning of this Institute and the book which has grown out of it. Persons from fields both within and without medicine joined in many deliberations before, during, and after the actual Institute held at Hollywood Beach, Florida, in November 1960. In proper Institute tradition, it was the enthusiasm of the participants themselves which constituted the lifeblood of the Institute, and it is in order to express our appreciation to the faculty members from the medical schools in the United States, Canada, Puerto Rico, and elsewhere. Likewise we would like to thank the other participants, the invited guests who in so many ways enriched the proceedings.

Special mention should be made of the major roles in organizing the Institute played by Dr. Jacobsen, as chairman, by Dr. Cecil G. Sheps and Dr. George A. Wolf, Jr., the subcommittee chairmen, and by Dr. Helen Hofer Gee, director of the division of basic research of the Association of American Medical Colleges. The Planning Committee for the Institute and the subcommittees spent many hours in designing its framework and substance. Acknowledgment should also be made of the generous support of the Commonwealth Fund and the United States Public Health Service, which was vital in providing funds for this and the previous Institutes.

It should be noted that the Commonwealth Fund also supported a major non-Institute contribution to this book—the study of experimentation in medical education by Dr. Peter V. Lee which constitutes Chapter 3.

It is hoped that those who read this volume will not only appreciate something of the spirit that enlivened the sessions of the Institute itself, but that they will also be stimulated and enlightened on the far-ranging implications of its content for the future of medical education and the effective organization of health services.

—Robert J. Glaser, M.D.
Vice-President for Medical Affairs and
Dean of the School of Medicine, University of Colorado
Chairman, Committee on Research and Education
Association of American Medical Colleges

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Introduction

THE PRESENT CENTURY has been a period of profound change in medical practice and medical education. Some of the differences between 1900 and 1960 have derived from the activities of the practitioner, the teacher, and the investigator; other changes have occurred in response to disruptions and adjustments of our society following two devastating wars and a severe economic depression. During this period medical practice and medical education have achieved a certain excellence of which we, as professionals, are proud and from which the patient benefits.

Social institutions change slowly; often they appear to be highly resistive to any modification. Our concern in this Teaching Institute of 1960 has been centered on the question of whether medical education has changed its ways sufficiently to prepare effectively the graduates of today for the medical practice they will carry on in 1970. The question is not unique to this Teaching Institute for it has been raised in previous conferences in this series that have dealt with the selection of students, the medical school as a setting for learning, the teaching of the sciences basic to clinical medicine, and the introduction of the student into clinical practice. In considering these topics, the focus of these earlier Institutes, while not unmindful of the broad social setting of medical education, has been centered primarily on the teacher and the student within the walls of the medical school and hospital.

Medical education, like any social institution, is under pressure to meet needs and desires of many groups of people in our society. It has been our purpose in this 1960 Institute—and in this book based on the Institute—to examine and consider the impact of some of the diverse and conflicting social forces that bear on medical education and that effectively shape its future. Medicine has experienced a remarkable success during the present century and has aroused hopes and expectations on the part of our citizens that are not now being met realistically by present patterns of medical practice—these expectations may never be fully satisfied.

The success of medicine, itself, has contributed to some of the present dilemmas and changes in medical practice and medical education. The increase in basic knowledge of human biology and the development of far more effective modes of treatment for the disorders of mankind have made it impossible for a single person to pretend competence in more than a few limited fields. The expansion of knowledge proceeds at a rate heretofore unknown in science, aided and abetted by the interest and financial support that has come from government and voluntary associations of people interested in health. This expansion of knowledge is not unique to the field of medicine, nor is the specialism attendant upon it unique to medicine. This specialism has, however, produced presumed maladjustments in the physician-patient relationship and the way of rendering

medical care. During our lifetime, control of infectious diseases has advanced appreciably, and we now find a great increase in the number of older people in our population and an attendant rise in the amount of chronic illness with its limitation on the functioning of the individual.

Better and more effective ways of treating illness have brought an increase in the cost of adequate diagnosis and of hospitalization. This situation presents one of the major issues in health care confronting the community, the health professions, and the hospitals. The economic depression of the 1930's induced radical changes in our society. Private charity and welfare, the contributions of the free dispensary, and the services of unpaid practicing physicians at one time went far toward meeting the needs of the medically indigent. Today it is no longer so; government at its various levels has become an ever more active participant in the affairs of welfare, including medical care and now medical education.

As the shock of the economic disruption wore off, it became clear to many, and especially the prudent, that cooperative effort in meeting the costs of hospitalization, and later the fees for physicians' services, was a reasonable and, within limits, a workable solution. Blue Cross became a symbol of security in the face of heavy expense from illness. Blue Shield was a further step. Industrial health plans and commercial insurance programs have offered other avenues of cooperatively meeting the costs of medical care.

The war imposed strictures on wage and salary increases; fringe benefits emerged. Properly, the union negotiator as well as management has become concerned about the costs of medical care and hospitalization, for these are scarcely "fringe benefits" today. Prepayment plans—or the third party—are irrevocable elements in medical practice and health care. Indeed, the myriad of third parties with their varieties of benefits lead the average citizen to a state of confusion. The implications for medical education are too poorly understood.

To what extent do medical faculties—full-time or geographic full-time—find themselves committed to heavy programs of medical service to the disadvantage of education and research? Should a medical faculty take responsibility for the medical care of a group within an established prepayment plan? Who pays, and how, the intern and resident? Is the solo practice of medicine the most economical for physician and for the patient? How does the medical college set about preparing its graduates for practice five years after their graduation from school?

These are some of the issues and problems to which the 1960 Institute Planning Committee and its two subcommittees addressed themselves. Early in the planning discussions it was evident that one of the burgeoning social forces having a tremendous impact on medical education today was the existence of the various programs of grants-in-aid of research, both federally and privately supported. They now provide a major component in the support of many faculties. To some, these enormous programs have appeared to be the salvation of research in the medical college; to others they appear more like an albatross that is gradually producing scoliosis

of medical education. Perhaps there is a middle position. The forthcoming 1961 Institute will be devoted to the consideration of this matter.

Since the turn of the century many private foundations have been established with an interest in medical education. Voluntary health agencies such as the National Foundation, the American Heart Association, and the American Cancer Society have focused on disease entities incorporating research, patient care, and education in their programs. Early in this century wealthy families with philanthropic impulses established private foundations whose programs were designed to improve and enhance health services, teaching, and research. The role of the Carnegie Foundation in realizing the Flexner Report is too well known to be elaborated on at this time. The Commonwealth Fund, among its many activities, studied and established rural hospitals in the interests of better and more comprehensive medical care. All of us in medical education are familiar with the later Commonwealth Fund programs focused particularly on medical education. The Millbank Foundation evinced an interest in home-care programs and helped support some of the early training of public health nurses. Numerous medical college faculties were vigorously stimulated by the Rockefeller Foundation to create stronger departments of psychiatry with funds for training practitioners and investigators. The work of this foundation in strengthening public health practice and education has greatly influenced health care and medical education.

Today the roster of foundations concerned with these problems grows rapidly. Some of these funds have been administered with wisdom and with broad understanding of the problems and objectives of medical education; others have reflected a more limited and biased interest, not necessarily in keeping with the objectives of the medical colleges. Their collective influence has been great.

The above listing of issues, problems, and social forces impinging on medical education reflects only a few of the many topics considered by the 1960 Institute Planning Committee. The elaboration of these topics and the planning of a program, as discussed in Appendix A, "Organization of the 1960 AAMC Teaching Institute," became the responsibility of two subcommittees chaired by Dr. George A. Wolf, Jr., and Dr. Cecil G. Sheps. The consideration of these and many other topics and the suggestion of speakers was the product of these two subcommittees and of the general Planning Committee. The responsibility for the final formulation of the program of the Institute and the selection of speakers rested primarily with the chairmen of the two subcommittees and the chairman of the Institute, with the active participation and help of the staff of the Association of American Medical Colleges. It can be fairly said that that which is good about the program of this Institute derives from the work of the several committees.

Development of the Institute publication

This book is more than a mere "proceedings" of the 1960 Institute. It represents in fact a culmination of Institute activity—both an interpre-

tative distillation of content and an expansion of background for the dynamics of medical education and the dynamics of medical care. As such, the editors hope this publication will meet the needs expressed by (1) medical education; (2) education in the biological, physical, social, and behavioral sciences; (3) health administration, both public and private; and (4) organizations representing consumers of medical care.

Immediately following the Institute meetings, Dr. Ward Darley, executive director of the Association of American Medical Colleges, initiated the suggestion that all Institute participants have an opportunity to comment on the formal papers as presented at Hollywood Beach. The resulting commentaries constituted the first step in the development of this book. An editorial committee—consisting of Dr. Darley, the two subcommittee chairmen, the chairman of the Institute, and Dr. H. Jack Geiger—reviewed the formal presentations of the guest speakers, the commentaries by participants, and the recorders' reports of Institute small-group discussion. On the basis of this review, plus a before-and-after discussion of Institute objectives, the present volume came into being.

All the papers are included, in some cases extensively revised for appearance in these pages, and some of the verbatim discussion from the floor is here likewise. Much of the material is completely new and not a part of the Institute per se. The five sections of Chapter 3 by Dr. Peter V. Lee report a study on experimentation in medical education done by the author under the auspices of The Commonwealth Fund; it is included within the context of Part II, The Dynamics of Medical Education: Their Portent for Medical Care, as the perfect exemplification of the editorial committee's desire for a "profile" of medical education. Chapter 5 is another new contribution; it was written by Dr. Ward Darley to round out the discussion of family practice within the milieu of growing specialism. In Part III, The Dynamics of Medical Care: Their Portent for Medical Education, a new paper by Dr. Sheps and Dr. Glenn G. Lamson, Jr., shows how the results of research in patient care can be applied to the organization of services. Also in Part III some of the material from the workbook for participants is organized with the chapters based on Institute papers to complete the discussion of medical care.

The final part of the book, under the authorship of Dr. Jack Geiger, is what the editorial committee referred to as its "editorial page"—an interpretation of Institute actions and reactions, a statement of conclusions, principles, and predictions based on the whole body of content surrounding the medical education-medical care relationship. The editors hope that the book as a whole will achieve its goal of bringing to its readers something more than a simple report of a very stimulating conference.

CARLYLE JACOBSEN

President of the Medical Center and Dean
State University of New York College of Medicine (Upstate)

Chairman, 1960 Teaching Institute

PART I

The World Around Us

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CHAPTER 1

Problems, Pressures, and Prospects

BY CECIL G. SHEPS

Professor of Medical and Hospital Administration
Graduate School of Public Health, University of Pittsburgh

A number of social and economic trends are relevant in considering medical care and medical education relationships and medical care demands and needs. We must consider the growth of prepayment plans, the changing character of the teaching patient, and the emerging roles of various kinds of physicians. Increasing public demand, not only for more medical care but for effectively organized services, makes it urgent that we reduce the gap between new knowledge and its application for maximum social purpose. A challenge is presented to medical education to reach beyond its usual subject matter for research and teaching.

MY SUBJECT is broad—the responsibility of medical education in applying modern scientific knowledge to contemporary problems in the area of the health services. My problem, moreover, is one of tempering personal enthusiasm and deep conviction with the objectivity and dispassionate reasoning which this important subject demands.

In approaching this problem, I recall an incident at the outbreak of the Boxer Rebellion in China in the year 1900. The reporter representing the *New York Globe* wired to his editor just as the rebellion broke out: "It is impossible to exaggerate the importance of the events that are now taking place, but I will do my best."

Public interest in medical care

Certainly the interest of the public in health and in health programs is clear to everyone. It is based on the broad recognition that health is a vital national concern, not only because of the direct relation of health to productivity and problems of defense, but also because of our relatively new notions about human rights and human dignity. Thus, it is generally recognized by the Western countries that medical care should be available to all people, regardless of their ability to pay, bringing the best quality of care to them when they need it.

However, there has probably never been a time in our history when so many people have been looking more carefully and questioningly at medical care. This is true not only of those who are professionally concerned with giving care, planning for it, and educating future members

of the health professions to play their proper role, but also of those who receive medical care, for they are scrutinizing it and are often less than satisfied with what they observe. There is no dissatisfaction with the technical aspects of medical care, with the miracles that are expected and so often performed. However, a great deal of the discontent stems from the human relations aspect of medical care services which individuals receive, from the unavailability of adequate care for certain sections of the population, the short supply of personnel and certain types of facilities and from the problems of financing comprehensive care for certain groups in the population.

What has been happening, therefore, is the recognition—greater recognition than ever before—that medical science is inseparable from the community and society, and that our task is to address ourselves more directly to the problems of the application of science to the needs of man and to the needs of society. This means that medicine and science must face a deeper involvement with society and social problems.

The laws of nature, while sometimes described as immutable, can also be described as permissive. They tell us what is possible; yet it is for us to determine what may be achieved. The newly developed theory of chemical feedback is paralleled by the relationship between the environment and the biological organism generally, between what sicence reveals about health and disease and what we learn about the ways in which society and social organization affect the practical application of this knowledge.

As has been noted, public interest in these matters is strong and clear. It is demonstrated first by the centuries-old interest of the individual, his sincerity in seeking medical care—whether by incantations, by leeches, by scarification or whatever it may be—and his payment for this care, as Oliver Wendell Holmes has said, "as though leeches were a luxury." The continuous and enlarging interest of the public in health services can also be seen in a much larger frame of reference. One needs no better demonstration of this interest than the annual increase in the magnificent support for medical research provided by Congress in the last decade. And now, following upon the financial support programs for an increasing number of medical specialties, serious attention is being given by Congress to the support of medical education per se.

A recent decisive illustration of the interest of the average person in comprehensive medical care is the choice made in the summer of 1960 by almost two million federal workers as to the type of health insurance plan they preferred. In every community of America they had two choices: a plan which provided a moderate, restricted scope of service benefits, or a more comprehensive plan that provided for a broader spectrum of services. The choice made by the individual employee did not affect the contribution by the federal government, so that the choice of the comprehensive plan meant that the employee would be entitled to more services only through additional payments which he would be required to furnish. It is significant that in July 1960, out of 1,738,828 federal employees who signed up, 81 per cent selected the comprehensive option rather than the

alternative restricted plan, despite the fact that the former was more costly to them.

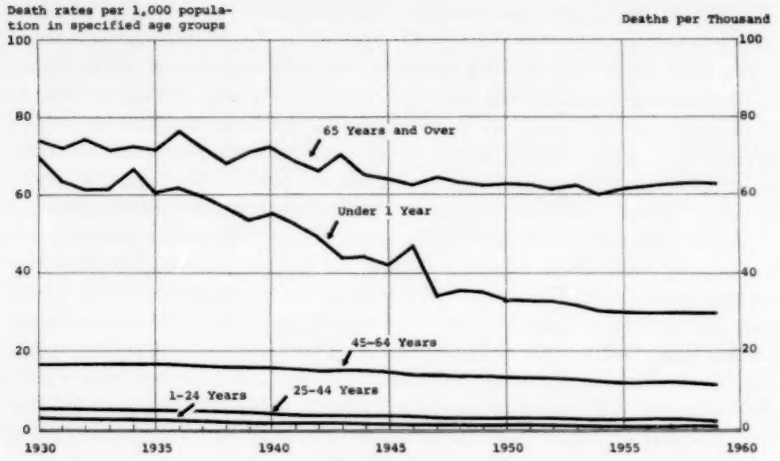
We have then, on the one hand, a rapid accumulation of biological information, a veritable blizzard of scientific progress through which we must find our way. And, on the other hand, we have the development of strong, deep social forces accompanied and influenced by this scientific knowledge, as well as having an influence upon it. The picture which emerges in many medical schools is that of the dean or the chairman of a clinical department occupied with scientific matters in the morning and in the afternoon faced with the demand of the city health department or the city hospital department for affiliation of their institutions or programs with the medical school. City-owned hospitals seek such affiliations mainly because they believe this will help them obtain interns and residents who can speak the language of their patients and will be reasonably well educated in medicine. We see the clinical scientist, concentrating on delineating the complicated capers of chlorothiazide congeners, who must at the same time learn how to handle the educational problem presented by the fragmentation of medical care. He must teach his students to be interested in and to relate themselves effectively to their patient as a full human being who comes from a family and goes back to his community. This is the kind of dilemma in which many of the most eminent and dedicated faculty members of medical schools find themselves.

I am reminded of a story about two zoo attendants who were searching for a monkey that had escaped from his cage and raided a nearby library. They finally found the culprit sitting on a park bench studying two books. One was Darwin's *Origin of the Species,* the other was a copy of the Bible. "What in the world do you suppose he is doing with those two books?" asked one of the attendants. "That's easy," replied the other, "he's trying to decide whether he is his brother's keeper or his keeper's brother."

There are many illustrations of the gap between the public demand for medical care and the delivery of such services. For example, a striking change has occurred in the expectations of the public for service from the emergency units of general hospitals. In the last decade, the amount of work has doubled, trebled, and even quadrupled in many hospitals.[1] There are indications that approximately half the patients who come to hospital emergency units for treatment do not have injuries or emergency conditions. They come, nevertheless, to what they have learned to recognize as a community center for medical care.[2] And yet, if one examines the way in which the emergency rooms are organized, if one sees how the house-staff assignments are arranged, it is evident that most general hospitals have not recognized this change in function. At best they are prepared to deal with the occasional accident case and the isolated booked

[1] Shortliffe, E. C., Hamilton, T. S., and Noroian, E. H., "The Emergency Room and the Changing Pattern of Medical Care," *New Engl. J. Med.* 258, 1958, p. 20.

[2] Lee, S. S., Solon, J., and Sheps, C. G., "How New Concepts of Medical Care Affect the Emergency Unit," *Modern Hospital* 94:5, 1960, pp. 97-101.



Source: U. S. Department of Health, Education, and Welfare; Public Health Service, National Office of Vital Statistics, annual *Vital Statistics of the United States* containing data through the year listed on the cover, and *Monthly Vital Statistics Report.* (Reprinted from HEW: Trends.)

FIG. 1.1.—Deaths by age groups, U. S. A.

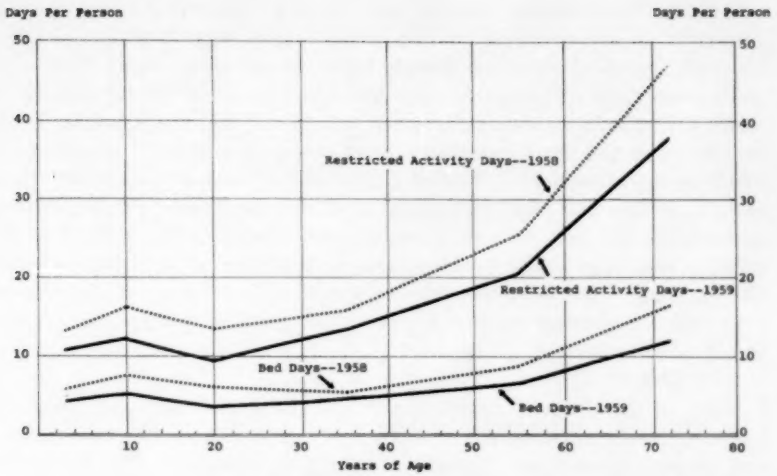
minor surgical procedure. If one talks to members of the medical staff of these hospitals, one finds that many of them resent this change. Some county medical societies have described this change in utilization of the emergency facilities and services of hospitals as an abuse and a misuse.

There are many instances of changes of this type—changes brought about by the uses to which medical resources are put by the medical profession as well as those resulting from alterations in public attitudes and expectations. There has been a profound transformation in the dynamics and potential of medical care in terms of needs, costs, financing, and manpower. A primary purpose of the 1960 Institute has been to consider the responsibility of medical education in preparing the physician for tomorrow and in modifying the organization of health services so that modern scientific medical knowledge is applied as widely and as effectively as possible.

Medical care needs

A major change affecting medical care needs is the change in life expectancy, which now approaches 69 years for males and 73 years for females. Since the turn of the century, life expectancy at birth has increased in the United States by 22.4 years for the white population and 29.4 years for the nonwhite population. The male now retiring at the age of 65 can expect to live 12 more years; his wife is likely to outlive him by more than 2 years.

The decrease in the death rate has taken effect unevenly. The death rate for the whole population fell from 14.7 per 1,000 in 1910 to 9.4 in 1959.



Source: U. S. Department of Health, Education, and Welfare; Public Health Service; *Health Statistics*, Series B, No. 10, *Disability Days, United States, July 1957-June 1958*. All statistics from the U. S. National Health Survey, authorized by Congress in 1956, are based on a continuing sample of the civilian noninstitutional population residing in the United States. Estimates for FY 1958 are based on interviews of 36,000 households containing approximately 115,000 persons; estimates for FY 1959 are based on interviews of 37,000 households containing approximately 120,000 persons. Each statistic is adjusted by two stages of ratio estimation to official Bureau of the Census population figures to make the sample estimate closely representative of the population by age, sex, color, and residence, and to reduce sampling variance. (Reprinted from HEW: Trends.)

FIG. 1.2.—Days of restricted activity and bed disability by age.

When changes in the age composition of the population are taken into account, the decline is even greater. Figure 1.1 shows the changes in the death rate in the United States by age groups since 1930. The greatest reduction took place in the death rate among infants under one year. A slow decrease has occurred in the death rates in the age group 25 to 44 and 45 to 64, although in the last few years there has been a leveling off. The bulk of the improvement in longevity is due largely to changes in the death rate under one year, generally resulting from public health measures of a broad community nature that have had the effect of controlling acute illness.

The effect of this on the age distribution of our population is well known. Since the turn of the century, we have had a quadrupling of the number of people 65 years and over to the present figure of about 16 million. It is estimated that there will be 25 million older people by 1980. At the present time, the percentage of persons 65 and over is 8.8 per cent, which is double the per cent at the turn of the century. If our high birth rate continues at its present level, there is little likelihood, however, that we shall become a nation of old folks in the next 20 years. In any case, it is estimated that the percentage of those 65 and over will level off at about 9 per cent.

The leading causes of death in the middle years of life—age 45 to 64

years—are heart disease, cancer, and cerebral vascular diseases, in that order. At 65 and over, the leading causes are the same with an alteration in order, cerebral vascular disease being second and cancer third. The death rate from all causes is over five times as great among persons 65 years old or over as among those between 45 and 64. For example, in the middle years the death rate from heart disease per 100,000 population is 485.2 as compared with a rate of 2,958.5 in the 65-and-over group. Thus, early detection and effective treatment of chronic diseases could probably postpone deaths and increase years of productivity. Another facet of the striking change in health problems and medical care needs is that, whereas 50 years ago acute infectious disease was the major cause of death, most frequently at younger ages, now more than two-thirds of deaths are due to chronic disease, and 60 per cent of the morbidity on any day is due to chronic illness.

Many of the chronic conditions that are not major causes of death do, however, produce widespread illness and disability. Arthritis, rheumatism, and mental illness are prominent examples. Estimates based on the National Health Survey show that 17 million people or approximately 10 per cent of the population have some limitation in the ability to engage in a normal activity as a result of one or more chronic conditions.

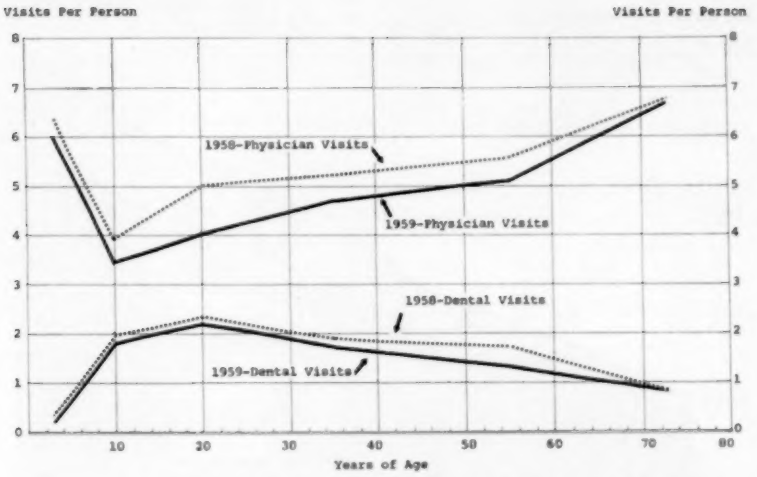
Figure 1.2 presents data on disability by age in 1958 and 1959. Though there was a difference between the two years, the patterns within each year were similar—a sharp increase in restricted activity with increasing age.

Figure 1.3 shows physician and dental visits by age in 1958 and 1959. Starting with a peak in the first few years of life, there follows a sharp drop in physician visits to age 10 years. After this there is a slow rise until the sixth decade, at which time a steep increase in number of physician visits per person begins.

There has been a marked increase in the volume of medical care given to individuals in the United States in the past few decades. In 1929, there were 2.6 physician-patient visits per person; by 1957 these visits had risen to 4.8 per person per year. Hospital admission rates have increased, so that we now have 130 admissions per thousand persons per year as compared with 59 per thousand only 25 years ago.

The hospital wards that once were filled with young people suffering from acute infections are now filled with much older people who are suffering with chronic diseases. In the past, a patient usually died very soon or quickly recovered from his illness. Today, a high proportion of disease does not kill quickly and can often be controlled, although never completely cured. In many instances the patient requires continuing medical care; it has been estimated that two-thirds of all medical visits are to chronically ill patients.

The increase of chronic illness has had a profound influence on the nature of the physician's task. While diagnosis is still important, interesting and sometimes difficult, the crucial problem is often that of treatment. And the problem of treatment is increasingly one of how to work with



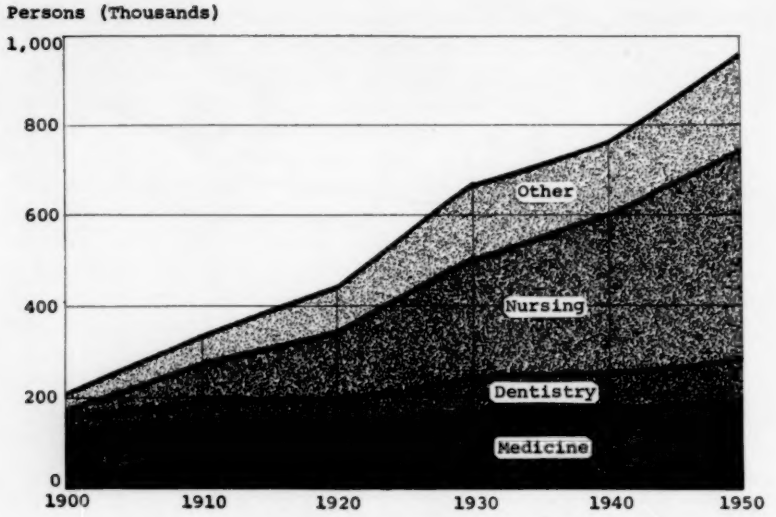
Source: U. S. Department of Health, Education, and Welfare; Public Health Service; *Health Statistics*, Series B, No. 8, *Selected Survey Topics, United States, July 1957-June 1958.* Data for 1958-59 are to be published soon in Series B. All statistics from the U. S. National Health Survey, authorized by Congress in 1956, are based on a continuing sample of the civilian noninstitutional population residing in the United States. Estimates for FY 1958 are based on interviews of 36,000 households containing approximately 115,000 persons; estimates for FY 1959 are based on interviews of 37,000 households containing approximately 120,000 persons. Each statistic is adjusted by two stages of ratio estimation to official Bureau of the Census population figures to make the sample estimate closely representative of the population by age, sex, color, and residence, and to reduce sampling variance. (Reprinted from HEW: Trends.)

FIG. 1.3.—Physician and dental visits by age.

the patient, his family, and his community, so that he can function as effectively as possible within the framework of his disability. Moreover, treatment frequently requires modifying the patient's habits and attitudes and bringing the resources of the community into focus in order to deal effectively with his particular problem. The increasing prevalence and the prominence of chronic disease, therefore, highlights the importance of comprehensive medical care. It means that at crucial times in the life of everyone an appropriately selected combination of personal medical care services needs to be available. To understand his patient, the physician must know the natural history of chronic illness. Optimum care is often conditional upon the understanding and support of the family and the community. The resources that are needed frequently involve the skills of other professions and community facilities, agencies, and programs.

We have been exposed to a good deal of discussion of comprehensive care in the past decade. It is defined variously by different professional groups and agencies.[3] But however it is defined, the changes in the health problems of our population are so far-reaching that we need to rethink the meaning of Flexner's recommendation concerning the union of medical

[3] See the discussion of comprehensive care by Peter V. Lee in Chapter 3, Section C.



Source: Reprinted from HEW: Health Manpower Chart Book.

FIG. 1.4.—Growth of selected health professions, U. S. A.

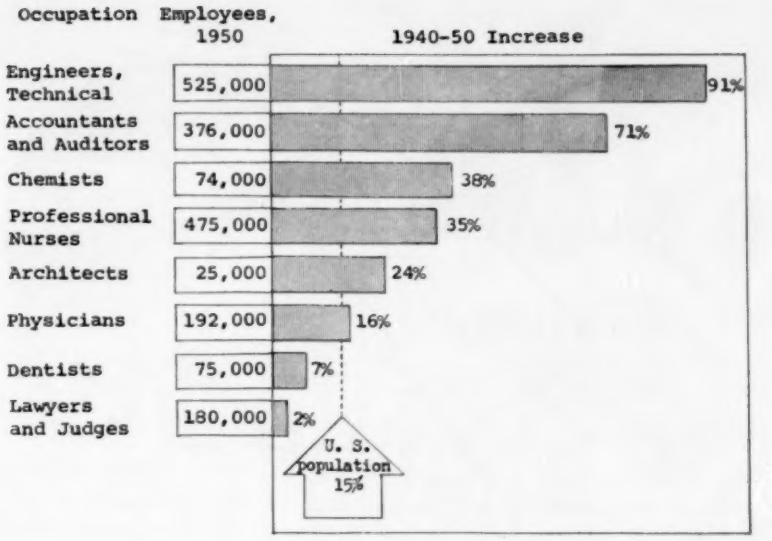
education with medical care. Present-day implications of this must be recognized in terms of following the patient and not simply tiding him over a particular episode. Treatment must be directed at the patient and not merely at the episode. This calls for comprehensive care and continuity of responsibility.

The health professions

As indicated previously, comprehensive personalized care cannot be provided by the physician alone. A team effort is required—a team whose members are increasing in number and diversity of role, responsibility, and training.

Figure 1.4 shows the growth of selected major health professions in the first half of this century. In this period, the number of professionally trained health personnel rose from about 206,000 to 969,000—a gain of 370 per cent contrasted with a total population increase of 99 per cent. The greatest gains were in the professions other than medicine and dentistry. Whereas personnel in medicine increased by 58 per cent, nursing increased 3,970 per cent! The physician, though still the leader of the medical care team, must work with an increasing number of diverse professional and technical personnel. In 1900, three out of five professional health workers were physicians. By 1950, only one out of five was a physician.

The dynamic, selective character of growth and change in numbers of



Source: Reprinted from HEW: Health Manpower Chart Book.

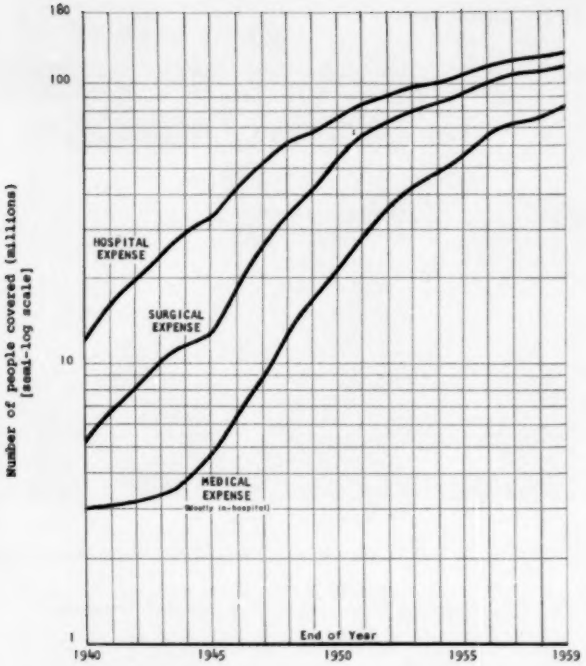
FIG. 1.5.—Increase in employment in selected occupations.

personnel going into various fields is illustrated in Figure 1.5. In one decade (1940 to 1950) when the population of the United States increased 15 per cent, the number of employed engineers increased 91 per cent; accountants and auditors increased 71 per cent, chemists 38 per cent, and professional nurses 35 per cent. This is contrasted with an increase of only 16 per cent for physicians, 7 per cent for dentists, and 2 per cent for lawyers and judges. Little is known about the determinants of such selective change. They are not simply a direct reflection of need or demand for such personnel.

The trend toward specialization in medicine is well recognized. In 1923 the full-time specialists represented 11 per cent of physicians in this country. By 1955 they had increased to almost 40 per cent. In absolute numbers they rose from 15,000 to 84,000 in the same period—nearly two out of every five physicians were specialists.

The different specialties or subspecialties of medicine alone have reached the count of 50. It has been estimated that there are some 62 recognized paramedical, professional or technical groups. Thus there is a need for paralleling specialization with the integration of the specialties in the care of patients. This presents a particular problem, it seems to me, to medical schools preparing their graduates for this new way of life.

There are clear-cut implications for the plans of medical schools regarding the objectives, scope, and volume of medical care to be undertaken by them in order to provide the clinical framework necessary for the education of tomorrow's physician. The question arises: What is the nature



Sources: Health Insurance Institute, *Source Book of Health Insurance Data, 1959*, New York, 1959; p. 11. Health Insurance Council, *Voluntary Health Insurance in the United States as of December 31, 1959*, New York, 1960; p. 3. (Reprinted from Sheps, C. G. and Drosness, D. L., "Prepayment for Medical Care," *New England Journal of Medicine* 264, February 23, 1961, pp. 390-6.)

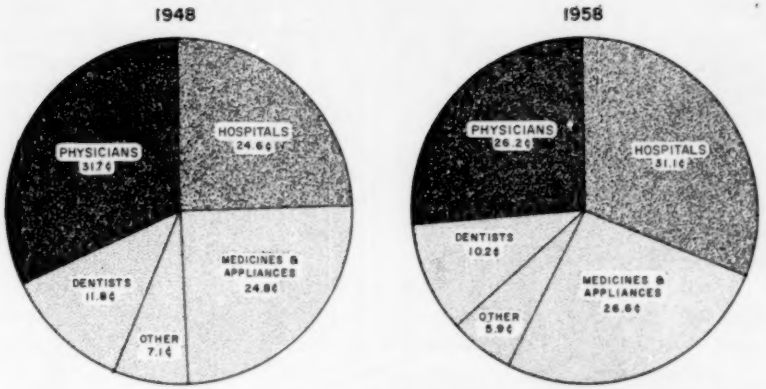
FIG. 1.6.—Health insurance in the United States by type of coverage, 1940-59.

of the medical school's responsibility to prepare physicians to work effectively with other members of the health team, with hospitals and related institutions, with community health and medical care programs?

The economic environment and health insurance

If we turn now to social change per se, we recognize first that these last few decades in this country have seen a substantial redistribution of income. For example, in the ten-year period ending in 1958, a change occurred which turned the pyramid of income distribution of the population into a diamond shape with a larger proportion of people in the middle income group.[4] In 1948, 27 per cent of the families had incomes from

[4] See Odin W. Anderson, "Medical Schools and the Social and Economic Environment," Chapter 7, Section A, Table 7.1.



Source: Brewster, Agnes W., "Voluntary Health Insurance and Medical Care Expenditures, 1948-58," *Social Security Bulletin*, Vol. 22, No. 12: Dec. 1959.

FIG. 1.7.—Medical care dollar: private expenditures by type of service in relation to total private medical care expenditures.

$4,000 to $10,000 per year. By 1958 this percentage had increased to 48.1 of the families. Although there was a devaluation of the dollar of some 25 per cent in that period, this change is nevertheless a significant one.

Paralleling this economic gain, but not completely due to it by any means, has been the great increase in health insurance coverage. Figure 1.6 illustrates the increase in health insurance coverage, on a semi-log chart, showing the rate of increase in number of people covered. This appears to be leveling off in the neighborhood of 130 million people for hospital expense, a little less for surgical expense, and even less for medical expense that is mostly in-hospital care. This remarkable development of health insurance coverage has created notable benefits, problems, and potentialities.[5]

Private expenditures for medical care, including voluntary health insurance, are now in the neighborhood of $100 per person, having reached $96 in 1958. This represents about 5 per cent of disposable personal income.

Figure 1.7 shows the distribution of the medical care dollar in 1948 and in 1958. The expenditures for physicians' services and hospitals together represent 56 per cent to 57 per cent of the total in each year. However, the ratio between them has shifted, and a greater proportion of the total expenditure now goes to hospitals than to physicians. Also, in 1958, for the first time medicines and appliances equaled or slightly outstripped physicians' fees.

Due to the fact that prepayment programs have placed overriding emphasis on the cost of hospital and physician services, attention to the

[5] Sheps, C. G., and Drosness, D. L., "Medical Progress: Prepayment for Medical Care," *New Engl. J. Med.* 264, 1961, pp. 390-6, 444-8, 494-9.

problems of paying for other elements of care has been delayed. However, the growth and acceptance of voluntary insurance as a method of payment for medical care clearly reflects the deep interest of the American public in assuring adequate medical care for themselves. There is ample evidence that these developments have greatly expedited and broadened the opportunity of the average American to obtain medical care and that he has availed himself of this. Every physician knows how, in his own practice, the availability of health insurance has facilitated his opportunities to perform needed procedures and institute therapeutic programs for patients with such protection.

The third party, the insurance mechanism, not only represents a fiduciary trust that provides one-third of the average doctor's income today, but is also rapidly coming to speak on behalf of the majority of the patients. With almost three-quarters of the population covered by some form of voluntary health insurance, and with the development of other programs of guaranteed payment for medical care for designated segments of the American people, the cost, quantity, and quality of medical care received under various types of arrangements may for the first time be determined and compared. Since most of the agencies are public or quasi-public in character, and since the private commercial companies must report to the state insurance commissioner, relevant data are becoming available for scrutiny by experts and by the public. This has become notable in the last few years when requests for substantial rate increases by Blue Cross Associations have resulted in extended public hearings and studies in New York state, in Pennsylvania, in Michigan, and in other areas.

Such investigations have not only meant that more attention is given to the over-all cost of medical care, but also that the institutions and professions concerned come under public scrutiny. These are institutions and professions that generally want to be admired but not disturbed. There are indications that not only hospital services but other elements of the medical care dollar, such as physicians' services and drug therapy, are likely to get similar attention in the years ahead.

The indigent patient and the teaching patient

The education programs of many medical centers are seriously hampered by the general decrease in the numbers of indigent patients who have traditionally provided the clinical experience essential to medical education's objectives. Until recently, virtually no one was ready to care for the indigent patient on an organized basis. There was a vacuum that was filled, at least partially, by medical schools, their affiliated hospitals, and other community hospitals—mainly in urban centers. The social forces and programs that are responsible for this change in the size of the indigent population and in the means of meeting some of its medical-care needs are probably irreversible—not that a reversal of the trend would be desirable in any case.

The indigent patient now generally represents a much smaller portion of the patient load of most teaching hospitals. A recent report by Dr. H. E. Pearse is illustrative.[6] In the Strong Memorial Hospital, Rochester, New York, the proportion of clinic or ward patients fell from 68 per cent in 1934 to 12 per cent in 1958. Such changes create serious difficulties in the continuation of traditional patient-care programs. They do, however, provide the stimulus to develop new approaches to the clinical framework as a context for medical education.

There can be serious question about the wisdom of using only patients in the lowest level of the socioeconomic scale in the teaching of new physicians. Yet, new opportunities are arising now to teach and to do research within the framework of providing comprehensive care on a continuous basis, inpatient and ambulatory, to a self-supporting population group.[7] There are, of course, special problems of control of standards, of scope and of volume.

Recently Dr. Ward Darley, in discussing the changing status of patients, defined a teaching patient as "an individual who elects to enter a teaching institution or service, who, on admission, knows that his care is to be in the hands of a staff-student team."[8] There are some long-standing examples of this approach by medical schools with private patients on an individual basis. Similar experiments by medical schools with organized groups whose medical care costs are prepaid by insurance are on the horizon.

Diversity of medical activity

A profound transformation is taking place in the role of the physician as an individual practitioner and his relationship to organized programs of patient care or research. A striking development is represented by the growth of group practice, which is reported by Pomrinse and Goldstein who compare the status of group practice in the United States in 1959 with 1946.[9] In 1959 there were three times as many groups in operation as in 1946—1,154 groups with 10,085 full-time physicians and 1,365 part-time physicians. A map of the United States showing the ratio of physicians in full-time group practice to total active physicians in private practice presents interesting contrasts of a ratio of 2.57 per cent in New England, 9.41 per cent in the West Coast states, and 18.03 per cent in the North Central states. An indication of the rate of growth of group practice is the fact that these groups planned to increase their full-time physician

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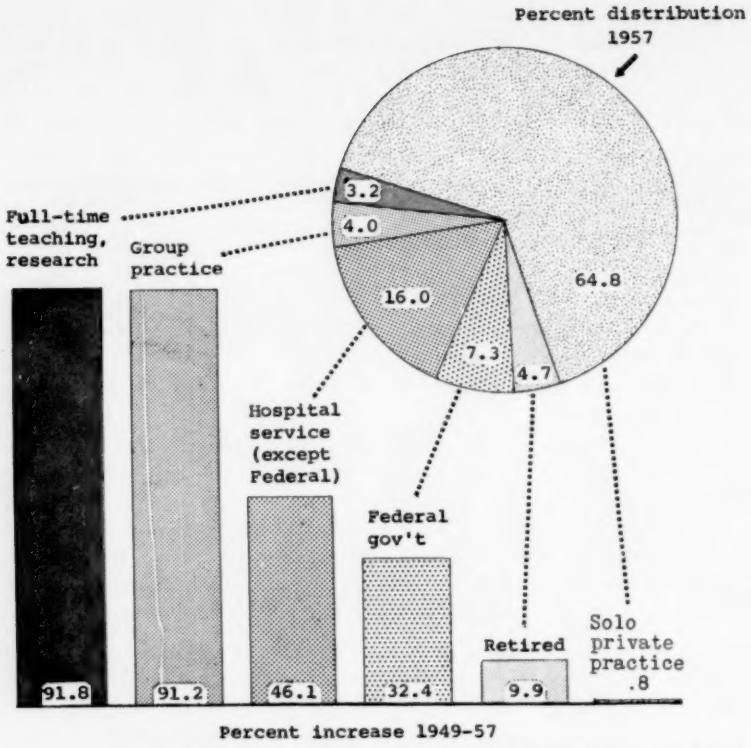
[6] Pearse, H. E., "The Effect of Specialization on Graduate Education in Surgery," *JAMA* 170, 1959 p. 307.

[7] See Thomas McKeown, "The Responsibility of Medical Education for Initiating Change," Chapter 6, and David P. Barr, "Comprehensive Care Through Insurance Plans," Chapter 8, Section B.

[8] Darley, W., "Undergraduate Medical Education and the Changing Status of Patients," *JAMA* 167, 1958, pp. 182-6.

[9] See S. David Pomrinse, and Marcus S. Goldstein, "Group Practice in the United States," Chapter 9, Section A.



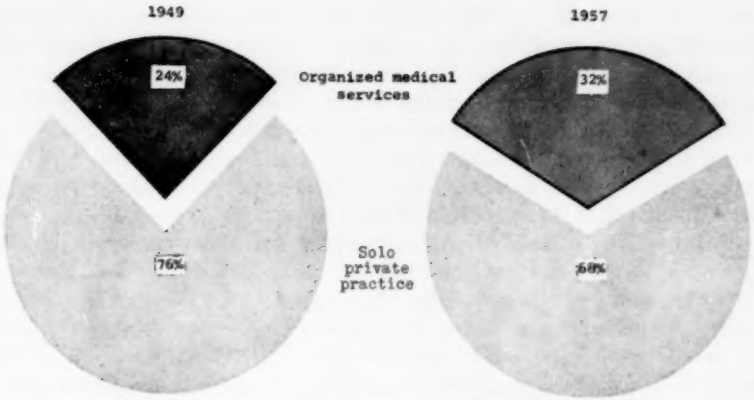
Sources: PHS Pub. No. 511, p. 30; PHS Pub. No. 709, p. 10; Pomrinse, S. D. and Goldstein, M. S., "Group Practice in the United States," *Group Practice* 9, November 1960, pp. 845-59.

FIG. 1.8.—Types of practice of physicians, 1957 vs. 1949

complement in 1960 by 10 per cent or 1,027 physicians. As Pomrinse and Goldstein indicate, it is interesting to contemplate the fact that this corresponds in numbers to almost 15 per cent of the graduating medical student class of 1960.

Figure 1.8 illustrates the type of practice of physicians in 1957 and provides data on the change since 1949. In 1957, 64.8 per cent of all physicians were in solo private practice—an increase of only .8 per cent over 1949. The number of physicians in all other classifications of activity increased rather sharply in this period. The 4 per cent in group practice in 1957 constitute an increase of 91.2 per cent over 1949, and the 16 per cent in hospital service represent an increase of 46.1 per cent.

The relationship of the physician to organized programs and institutions is perhaps illustrated most graphically in Figure 1.9. This shows the proportion of physicians in organized medical activity to all active physicians. The "organized medical services" category includes full-time teaching and research, group practice, hospital service, and government



Sources: PHS Pub. No. 511, p. 30; PHS Pub. No. 709, p. 10; Pomrinse, S. D. and Goldstein, M. S., "Group Practice in the United States," *Group Practice* 9, November 1960, pp. 845-59.

FIG. 1.9.—Types of practice of active physicians: major categories of practice, U. S. A., 1949 and 1957.

service. Retired physicians are excluded. One notes the remarkable increase in the proportion of active physicians working in some sort of organized program, from 24 per cent in 1949 to 32 per cent in 1957. Therefore, it might be estimated that approximately one-third of the medical activities in this nation are conducted in an organized manner—in the form of programs. Such programs provide valuable opportunities, hitherto unavailable in such large measure, for specific goal-setting, for purposeful planning of the scope and quality of services, and for the evaluation of performance and achievement.

The expert and the public

In the heated debates about the ideal form of the organization of medical care, reliable pertinent data can be of special value. Such data have, until recently, been scarce, but now studies of this type are becoming increasingly feasible.

For example, at the 1960 Convention of the United Steel Workers of America, a study of medical services for the steel workers was reported.[10] Data were presented showing that when union members in California obtained medical care from the Kaiser Foundation Health Plans, the kind of care they received in terms of utilization was strikingly different from the services they received on a free-choice, fee-for-service basis through

[10] Insurance, Pension and Unemployment Benefits Department, *Special Study on the Medical Care Program for Steelworkers and Their Families.* (Atlantic City: United Steel Workers of America, 1960), p. 89.

Blue Cross and Blue Shield. Hospital admissions under the Kaiser Plan were 90 per thousand, whereas under Blue Cross admissions were 135 per thousand, more than one-third higher. Days of hospitalization under the Kaiser Plan, with continuity of responsibility, were 570; under Blue Cross, 1,032, or twice as much. Surgical operations under the Kaiser Plan were 33 per thousand; under the Blue Shield Plan, 69 per thousand. Although there are many questions that can be asked about these data relating to comparability and the standards of care, these facts, as they stand, nevertheless command attention, careful study, and analysis, in order that we may learn the lessons they are likely to contain.

In the conduct of such studies and generally in the development of policy and procedures affecting the organization and availability of medical care services, the question often arises, "What is the role of the expert?" It has been said that a democracy would not accept the thesis that lawyers are the best lawmakers, that property owners are the appropriate arbiters of what constitutes a slum, or that farmers the most suitable judges of clean milk standards. And while certainly no standards can be developed without the active participation of those who deliver the services, the public has an interest and a responsibility in these matters which it quite clearly intends to exercise. We need, therefore, to find ways of working together so that the expert can be, as Harold Laski has said, "always on tap, but never on top."

Some new tasks

I should like to mention only two illustrations of new problems and opportunities that the contemporary scene provides for the medical school.

The first of these is the problem of the rational and most effective use of drug therapy in the face of the vast proliferation of drugs which are now being marketed.[11] We have in recent years witnessed a major revolution in drug production and utilization. The number of prescriptions filled in the United States has increased almost fourfold in the past 20 years. More than 70 per cent of the dollars now being spent are for products less than ten years old. This is not always, however, a sign of progress because out of an average of 477 new products marketed in the United States in each of the years 1948 to 1959 there is only an annual average of 41 new chemical entities. The others were duplicate products by new manufacturers or compounded mixtures, and some represented new forms of administration. Production and drug distribution is now a large-scale industry that has the same characteristics as other large industries in our economy, with only a few built-in safeguards. There is now rapidly increasing recognition of the fact that steps need to be taken to provide for more efficient and scientific evaluation of drugs before they are made generally available for clinical use.

[11] Sheps, M. C., "The Clinical Value of Drugs: Sources of Evidence," *Amer. J. Publ. Hlth.* 51, 1961, pp. 647-54.

Medical faculties and their medical centers can play a crucial role in dealing with this important problem. First, they must of course teach their students how to approach the evaluation of drug therapy scientifically so that they will understand the principles of such evaluation, mainly through the teaching of statistics and clinical pharmacology. Thus students would be better equipped to assess the reports about new drugs, whether they appear in the medical literature or in the attractive brochures issued by the pharmaceutical companies.[12] This, however, even if largely successful, cannot achieve maximum effect of itself. The pressures in our "other-directed" society are such that it is too much to expect the average physician to have the time and the facilities adequately to review the literature dealing with a goodly proportion of the four or five hundred new pharmaceutical products that are introduced each year.

The medical faculty can, within the framework of its teaching hospitals, carry out the type of evaluation that takes place, for example, in the New York Hospital through the development of its formulary.[13] The programs of therapy developed through the use of scientific, critical standards affecting the use of new preparations can then be used as a basis for continuous, planned feedback to the other hospitals and physicians in the geographic area to which the medical school provides leadership and demonstration.

Another new and increasingly important opportunity and responsibility for medical schools is research in medical care. It is generally agreed that medical faculties are expected to demonstrate the very best medical care. The increasing demand for medical services, the scarcity of health personnel, and the high cost of care, accompanied by greater emphasis on planning for medical care and financing at the national level, all serve to highlight the importance of developing methods of providing medical services of high quality to our population with a minimum of waste. A start is now being made with experiment and evaluation. Medical care research covers a wide range of problems. It is concerned with who provides medical and allied services, to whom these services are given, the quality and quantity of such services, the avowed purpose of specific services, and the extent to which these purposes are being achieved. This research is being done in hospitals, in health departments, and in medical centers. Though some medical faculties have made a beginning in this work, there is much more that can and should be done.[14]

The prospect

All the indications lead one to expect that the trends outlined in this paper will continue in the directions already well established. The rising

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[12] Sheps, M. C. and Shapiro, A. P., "The Physician's Responsibility in the Age of Therapeutic Plenty," *Circulation* (in press).

[13] "The New York Hospital Formulary—A Venerable American Institution," editorial, *JAMA* 174, 1960, p. 67.

[14] See Lee, P. V., Chapter 3, Section C, and Sheps, C. G. and Lamson, G. G., Chapter 10, Section D.

expectations of the general public with regard to medical care will continue to grow. This will provide an increasing demand for medical care which is not only quantitative but also qualitative—a demand for medical services that are comprehensive and for a financing system that frees the patient from financial embarrassment at the time that services are needed and makes all needed services readily available. The development of third parties that are responsible for paying or organizing care, whether voluntary or government, means that the public will probably enlarge its effort to assure the proper utilization of services. New forms of organizing services will be developed. There is every reason to believe that the support being provided, through tax funds and by voluntary contributions for medical research and for medical insurance, will be increased. Also, greater support for medical education is likely from both sources. With such support and sponsorship, however, come new problems of accountability.

In the face of the continued, almost geometric, growth of scientific biological knowledge and information and striking social change, the task of medicine generally, and medical education specifically, is to capture both of these forces in order to make them work for each other.

In one of the planning meetings for this Institute, a member of the committee suggested that the qualities that should be developed in medical students, and emphasized anew, are those of an open though disciplined mind that has a broad understanding of society and is prepared for change. Clearly, this is a very difficult challenge for medical schools that now find themselves at the point which has perhaps been best described by Dr. Carl Binger:[15]

> In the long history of medicine, we physicians are but characters in the play called *As You Desire Me*. When society believes in evil spirits, we wear masks and beat drums to frighten them away; when it is persuaded of possession by witches, we bore holes in our patients' skulls to let the witches out; when it is given to materialism and worships the dynamo, we become engineers who approach the study of disease with mathematical equations and curves drawn on graph paper; when the emotional problems of living confront us on all sides, we turn to psychosomatic medicine. Finally, when society is forced by events to recognize its own disorder, then we physicians reluctantly crawl out of our libraries and laboratories and consulting rooms to talk to the people directly. Such a time is now with us.

I believe that medical education has a contribution to make that no other force in our society can make as well in its stead. This is clearly and predominantly the challenge to medical education—to discover, through research, new ways of applying what we know in order to reduce the lag between development of new knowledge and application of it for maximum social purpose. To achieve this end, medical education must reach beyond its usual subject matter. We must acquire new concepts, cultivate new fields, as well as till the old and familiar ones in different ways.

Now is the time for imaginative action. The business is urgent.

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[15] Binger, C., "Medical Information and Misinformation," *Mental Hygiene* 30, 1947, pp. 1-13.

CHAPTER 2

The Expanding Body of Scientific Knowledge

Introductory Note to Chapter 2

The title of the 1960 Teaching Institute, "Medical Education and Medical Care: Today and Tomorrow," provokes certain thoughts which have been graphically presented in a recent paper by one of our colleagues in the form of a three-legged milking stool—the implication being that medical schools today are concerned with teaching, research, and service, each representing one leg of and providing stability to the stool.[1] *As our colleague would seem to imply, it is important in order to maintain stability of the milking stool that local vandals who want to saw off one or the other leg should be discouraged by persuasive if not forcible means. Dr. Arthur Richardson, a few months ago, manifested fatigue with the milking stool analogy but suggested that the educational leg get a little more attention.*[2]

In the construction of the Teaching Institute program, it occurred to us on the Planning Committee that urgency could submerge good sense, and that on the first morning of the Institute we should consider what superficially appear to be less urgent problems but hopefully fall in the area of good sense. There is no doubt that our medical educational programs are subject to pressures from a variety of sources. As our colleagues quoted above have suggested, we frequently, in the face of these pressures, permit our programs to get out of balance. Facetiously, one might apply the universal formula which states that Effect (on our programs) equals Money times the Rate (at which it becomes available) squared. In "We Must Not Let Moscow Set Our Pace," which appeared in the New York Times Magazine *for October 2, 1960, Charles Frankel says: "It is unworthy of our powers and possibilities to have our horizons set by a society (USSR) that has not yet got beyond dreaming of a Poor Man's Paradise." Presumably, our own educational objectives in medicine are beyond dreaming of a bigger research budget and immortality on earth for all mankind. This 1960 Teaching Institute has been designed purposely*

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1 Snoke, Albert W. "The Teaching Hospital—Its Responsibilities and Conflicts," *J. Med. Educ.* 35, 1960, pp. 207-13.

2 Richardson, Arthur, "Medical Service as a Medical School Function," *JAMA* 173, 1960, p. 1291.

to lay bare some of the pressures under which we are operating both knowingly and unknowingly. Undue concern with society's present health needs—for example, the cure of cancer—on our part as educators may lead us to attempt to create a younger generation in our own image. It takes little fortitude and no wisdom to state that our own image leaves much to be desired and that the future of medicine should be determined by the doctor of the future for whose education we have the responsibility.

We must, as educators, be aware of the health needs of the nation and the world, of course, and universities may conduct certain research into the problems of medical care. However, we must believe that proper education will prepare men to deal with the problems of the future.

It is my feeling that, in the university medical college, research for other than its own sake and medical care for primary purposes other than education detract from the educational program. There are many instances in this country where university medical colleges have contracted to provide unlimited medical service to cities or states without provision for funds for adequate service staff, so that the faculty must neglect teaching

FIG. 2.1.—The educational leg.

and research to meet service obligations. In addition, some universities have given over the right of appointment of their clinical faculty to a hospital or other service groups. To define the issues in the above terms and to maintain the objective of educating men and women for tomorrow is the challenge we in medical education must face.

Exploration of educational and social factors surrounding these issues was the purpose of the entire Institute. Chapter 2 is devoted to the expanding body of scientific knowledge and the implications both for the education of future physicians and for medical care. The three speakers, Dr. Frank L. Horsfall, Jr., Dr. Stewart Wolf, and Dr. Dael Wolfle, had an impressive impact on their audience the first morning of the Institute. These papers appear in the three sections immediately following.

Before closing these introductory remarks, let me say it is indeed fortunate that because of the efforts of a member of the Faculty of Agriculture of the University of Vermont I, as a spokesman for medical education, am able to document my contention that the three-legged milking stool is outmoded and that it has been replaced by a more suitable device (see Figure 2.1). Possibly, we could refer to this one leg as education, but I hasten to add that the man pictured seems to know what his job is, and he has both feet on the ground—a stable and well-balanced situation indeed.

— George A. Wolf, Jr.
Vice-President for Medical and Dental Affairs
Tufts University School of Medicine
Executive Director, Tufts-New England Medical Center

A. On the Unity of the Sciences

BY FRANK L. HORSFALL, JR.

President and Director
Sloan-Kettering Institute for Cancer Research

Molecular biology has become a reality and a marriage between the biological and physical sciences is the result. Biology, like chemistry, is in a position to discard many of its descriptive shackles. The unifying principles that emerged from knowledge of the structure of the atom, which so changed ideas in the physical sciences, now have their counterparts in new knowledge of the structure of the gene, which is of course the elementary basis for the continuity of life.

IT WAS ONLY 16 years ago that the seeds were sown which led gradually to what is now so clearly a revolution in the biological sciences. In 1944, it was announced by Avery, MacLeod, and McCarty that nucleic acids may possess biological activity; that they can direct and orient inheritance in bacteria. This now classic paper created a storm of protest and the conclusions were vigorously opposed by many reputable authorities. It took nearly eight years before the full significance of this astonishing discovery was generally recognized, and almost another eight years to bring the revolution it initiated into full flower. In the interval, several Nobel prizes were awarded, though not to the original discoverers, for remarkable advances in knowledge which were closely related either to nucleic acids or their genetic activities.

The revolution in the life sciences, to which reference has been made, has produced almost as remarkable and as unexpected results as the revolution in the physical sciences that was initiated by the discovery of radioactivity. The formal lines between the several disciplines have disappeared in biology just as they were forced to break down in the subdivisions of the physical sciences. It is no more possible now to make a clear distinction among cytologists, geneticists, immunologists, and virologists than it is among chemists, physical chemists, and physicists. They attend each other's meetings, present papers on associated problems, utilize materials, techniques, and instruments that, ten years ago, either they were not interested in or had not heard of; but most importantly they have come to speak a nearly common language, which makes it possible for them to understand one another.

Such then is the force of a new and sweeping concept, which embraces all of biology, from viruses to whales, in a single unifying principle. With the discovery that nucleic acids are the chemical basis for heredity and that the biological phenomenon, identified as the gene, is in fact attributable to a specific polynucleotide sequence, molecular biology became a reality and the long hoped-for marriage between the biological and physical sciences commenced.

To exemplify this synthesis among scientific disciplines that have long had too little in common, there is presented a single figure which has been selected with some care (Fig. 2.2). A glance at this lovely gem, more valuable than a diamond, reveals that it is a physical entity—a nearly perfect crystal with many sides. The magnification is low and the crystal probably could be seen with the naked eye.

A crystallographer would undoubtedly assign a long name to this object, but despite the extraordinary power and resolution of his instruments, it is doubtful that he could precisely identify it.

A chemist would find that the crystal is composed of but two molecular species, one protein, the other nucleic acid, and could show that the nucleic acid is of the ribose type and makes up about 30 per cent of the substance. But it is doubtful that he would establish the nature of the crystal.

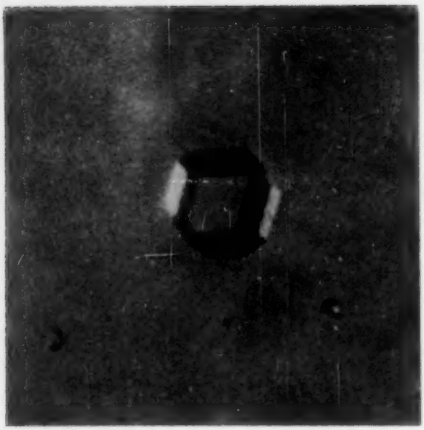
A physical chemist would find that the ribonucleic acid has a molecular weight of about 2 million, the protein one of a few hundred thousand. He could also demonstrate that the crystal is entirely composed of like units with a particle weight of many millions and infer that each particle contains both protein and nucleic acid. If he were very clever he could separate the two components that make up the particles, without destroying either, but he might need a biochemist to help.

An electron microscopist would find that the crystal is made up wholly of very tiny spheres, measuring about 27 millimicrons in diameter, and he just might be able to discern that the central portion of each sphere had a slightly higher electron density than the peripheral area. He would not be able to visualize any limiting membrane, but, if he had had much experience with similar objects, he might begin to suspect the identity of the material. Certainly he would establish that the crystal contained several billion like particles, for he could count them without great difficulty.

An immunologist would find that the crystal contains antigenic material and that it could stimulate the production of several kinds of antibodies in a number of different animal species. He would do well not to test it in this way in man or in monkeys, however, for if he did and were a really competent immunologist he could certainly identify the substance.

A virologist would make the startling discovery that the crystal is composed of type I poliomyelitis virus and that even a relatively small number of the particles, perhaps no more than 30, could induce severe paralysis in man or other primates. If now he obtained the ribonucleic acid that had been carefully separated from the protein component by the biochemist, he would find that it, too, is infective. Thus, he would have in his hands an *infective molecule* (how odd these two words seem when used together), one that can guide and direct the synthesis of more molecules like itself and ultimately lead to the production of disease.

A geneticist would find that the virus, or the infective nucleic acid—the distinction has become merely semantic—possesses heritable proper-



Source: Steere, R. L. and Schaffer, F. L., "The Structure of Crystals of Purified Mahoney Virus," *Biochim. et Biophys. Acta* 28, 1958, 241-6.

FIG. 2.2.—A single large crystal of Mahoney poliomyelitis virus (× 80).

ties which can be identified as genes, that it may undergo mutation as do other biological entities, and that the mutants have heritable properties which probably reflect alterations in the fine structure of their nucleic acids.

The lovely crystal has taken on some surprising attributes. It is one of the first ever to be prepared with an animal virus, and it is appropriate to acknowledge gratitude to Dr. Wendell Stanley, the Virus Laboratory of the University of California, for this excellent reproduction. To analyze in depth this seemingly simple object has required the kinds of professional competence that previously were to be found only in some eight different scientific disciplines, both physical and biological. Because of the large significance to broad understanding that material of this kind contributes, biologists have recognized their need to acquire more than a nodding acquaintance with the physical sciences at the same time that many in the latter disciplines have appreciated the importance of knowing more of biology. The results of this new community of interest, of the rebirth of the natural philosopher, if you will, have been both unexpected and remarkably rewarding.

Not only are we confronted now with a number of infective molecules (some of the deoxyribonucleic acid type have recently been obtained from tumor-inducing viruses), but also we can no longer escape a new biological concept—that of *infective heredity*. Certain bacterial viruses induce heritable changes in the bacteria they infect, as too, of course, do several viruses that induce tumors in animals. A striking example is the diphtheria bacillus which is led to produce a new protein, i.e., diphtheria toxin, as a result of infection with a bacteriophage.

New genes now can be introduced into certain cells; genes previously present can be masked or overridden, and biological material is beginning to acquire a made-to-order aspect that recalls the remarkable achievements of synthetic organic chemistry. Heredity has acquired wholly new aspects, and the possibility that it may be controlled and guided seems no longer to be merely visionary.

Cytology and fine anatomical structure are being re-evaluated through systematic application of the electron microscope. Cytoplasm has ceased to appear simply as a structureless jelly and has been revealed as a complex maze of channels and organelles with distinctive metabolic functions.

Chromosomes have been assigned individual designations, and aberrations in their number and variety are now associated with certain abnormalities in sexual development as well as with some congenital malformations, for example, mongolism. The mitotic apparatus has been separated from cells and studied as an independent entity. It still remains a mystery that chromosomes cannot be visualized during the intermitotic interval.

The precise amino acid sequence of some proteins, e.g., insulin and ribonuclease, is established, as is that of certain pituitary hormones. That the chemical structure of the latter substances had been exactly understood was proved when they were synthesized and shown to possess predicted biological activity. One type of human abnormal hemoglobin which is genetically determined is known to differ from the normal respiratory pigment only in respect to a single amino acid.

Immunology, possibly one of the most important and also one of the most underdeveloped among the biological disciplines, is rapidly coming of age: the recognition of the existence of so-called auto-immune mechanisms, the exquisiteness of the distinction between "self and non-self," to use Burnet's terms, and the remarkable advances in understanding of homograft rejection, are indicative of what lies ahead in this field. That it, like so much else in the life sciences, is directly under genetic control, which is now known to be definable in molecular terms, is illustrative of the encouraging advancement and the progressive unification of scientific knowledge.

The revolution that has occurred recently in biology has been emphasized in part because it is exciting, but chiefly because of what it implies for understanding. The maze of seemingly unrelated technical detail that has plagued and often discouraged the student of the life sciences is beginning to aggregate in a meaningful way, and much of it now hangs well together in a framework of principles that are solidly based.

The discovery that a nucleic acid molecule can reproduce itself in a biological environment, that it carries in its chemical structure as much coded information as can be found in more than 100 textbooks, and that by virtue of chemical necessity it controls the synthesis of its complementary partner with such precision that a mistake, i.e., a mutation, occurs less than once in a million replications, is not only impressive but very far-reaching.

Biology, like chemistry, is in a position to discard many of its descriptive shackles. The unifying principles that emerged from knowledge of the structure of the atom, which so changed ideas in the physical sciences, now have their counterparts in new knowledge of the structure of the gene, which is of course the elementary basis for the continuity of life.

B. The Implications of Social Sciences for the Future of Medicine

BY STEWART WOLF

Professor of Medicine and Head of the Department
University of Oklahoma School of Medicine

Over the past 500 years the major emphasis in the understanding of health and disease has shifted rapidly from anatomy to physiology and pathology to biochemistry to medical ecology. The time is at hand for the social sciences to contribute to the latter emphasis. At present the social sciences are about as "scientific" in relation to medicine as chemistry was 100 years ago. Growth of knowledge will be rapid. The emphasis required is on human values, not on economics.

The relevance of human values to human health will be recognized and dealt with. The most practical way to foster this development in medical schools would be to promote facilities for researchers in the social and behavioral sciences and to allow students and faculty thereby to become stimulated and interested. Ultimately these sciences will find their proper place in the curriculum.

THE SOCIAL SCIENCES AND MEDICINE

IN 1847 Rudolf Virchow observed: "Chemistry has already accomplished a great deal for us, although thus far very little is useful for practical purposes. We expect a great deal more from it."[1]

It might be fair to say that the social sciences stand in relation to medicine where chemistry did 100 years ago. Even at that time, however, Virchow himself recognized the importance of social science to medicine. In his own words: "Medicine is a social science in its very bone and marrow." Indeed Virchow had the answer to this quote from Parkinson,

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1 Virchow, Rudolf. *Disease, Life and Man* (Stanford, California: Stanford University Press, 1958).

which was included in the background material for the 1960 Teaching Institute:[2]

> When the moment comes to launch the space ship the equipment used will represent the latest thing in technical and scientific progress. The scientists in charge of the operation will be the leaders (we hope) in their respective fields of knowledge. All that is obsolete by contrast will be represented on the platform. There under the awning and between the potted plants will be grouped the politicians, the party chiefs, the religious spokesmen, the venerated community leaders and the accepted prophets of the age and they will all be completely and utterly out of touch with the matter in hand. They will typify the government, the directing body and all that is most respected in our social system, the one part of our organization which we have completely forgotten to modernize.

Virchow's idea was perhaps more like Stanton's. In 1849 Virchow wrote:[3]

> If medicine is the science of the healthy as well as the ill human being, what other science is better suited to propose laws as the basis of the social structure in order to make effective those which are inherent in man himself? Once medicine is established as anthropology and once the interests of the privileged no longer determine the course of public events, the physiologist and the practitioner will be counted among the elder statesmen who support the social structure.

It was as if Virchow 100 years ago had recognized the need to head off the circumstances described by Parkinson. Unfortunately the fulfillment of Virchow's dream has been long in coming. It may be a little closer. The social sciences began to be recognized as pertinent to medicine when it became evident that they were pertinent to disease, when investigators became aware that the brain governs adaptations in organs distant from it.

The adaptive function of the nervous system

For the purposes of this symposium, the social sciences might be thought of as those disciplines that concern themselves with man's relationship to man. Inevitably then, they deal with human values—aims, goals, and attitudes, conscious and unconscious. Thus the social sciences deal with the highest integrative functions of the nervous system. Presumably the high development of the mammalian nervous system has been responsible for our continued presence in the world. The dinosaurs had far more formidable weapons of attack and defense than did the mammals, and yet they became extinct at about the time the mammalian design was developed in the course of evolution.

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[2] Parkinson, C. Northcote. "Haste and Waste in Science," *Think*, February 1960, pp. 24-7.

[3] Virchow, *op. cit.*

Mammals were generally more vulnerable than reptiles, but they were also more adaptable. The integrative activity of their brains provided for maintaining the temperature of their blood more or less constant in the face of variations of 100 degrees or more in the surrounding atmosphere. Mammals also were able to adapt to wetness and dryness, to altitudes, and to the wily predatory maneuvers of their enemies. It would appear, therefore, that the purpose of the brain may be stated not so much in terms of maintaining constancy of internal environment but rather of providing effective adaptations to change in the external environment.[4] This includes the domain of the social sciences.

Important adjustments to cultural and social pressures and to interpersonal stresses are made through the interpretive areas of the brain. A good deal of groundwork in communications must be laid among the medical disciplines themselves before they can learn what needs to be learned from the social scientist.

Problems of communication

English-speaking neurophysiologists for the most part do not formulate their findings in psychological terms, despite the fact that they may be concerned with excitation and inhibition at the cortical level. Conversely, as the facts relating the functions of the brain to those of the rest of the body have accumulated, they have had relatively little effect on the thinking of most psychiatrists, who continue to refer to such abstractions as "psychic energy" and "motivational force." Neither have the findings of the neurophysiologists been incorporated into the thinking of most clinical investigators whose special fields embrace the organs in question, such as the cardiovascular system, the lungs, the kidneys, and so forth.

The language of the neurophysiologists, the psychiatrist, and the clinical investigator in this country are so disparate as to make it very difficult for them to understand one another. The Russians have not suffered this handicap and, in fact, are a good deal further along than we are in understanding the relation of the nervous system to disease, thanks to the influence of a contemporary of William Osler named Botkin. He evolved a clinical theory based on the work of his compatriot Sechenov and called it "nervism." In it he proposed that most, if not all bodily processes are subject to some sort of regulation by cortical mechanisms —or, in our terms, neural integrative activity.

Sechenov, who had worked under Claude Bernard, was impressed not so much by the constancy of the *milieu interieur* as by its capacity to adapt, presumably under nervous control, to changes in the *milieu exterieur,* and thus protect the organism. He expressed his ideas in a book

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[4] Wolf, Stewart, "Disease as a Way of Life: Neural Integration in Systemic Pathology," *Perspectives in Biology and Medicine* 4, 1961, pp. 288-305.

called *Reflexes of the Brain*,[5] which aroused severe criticism from orthodox official czarist Russia, and became identified with the growth of the philosophy of dialectic materialism and the resultant political changes.

In the scientific world, however, Sechenov and his book inspired Pavlov's experimental work and his discovery of the conditioned reflex. Since the death of Pavlov, his pupil Bykov, with a great number of collaborators, has accumulated an enormous body of evidence relating efferent and afferent connections of the cerebral cortex to a wide variety of visceral functions including tissue metabolism.[6]

Consequences of the development of the brain

We are gradually learning that in biology the only permanent thing is change, change requiring ever new adaptive responses on the part of organisms, races, and species to serve their need to survive. Man's thinking brain has at once aided him in his adaptations and created new challenges for him. His science and technology have provided protection from the elements and from other destructive forces in the environment.

They have also faced him with hazards of injury, accidental death, and subtler dangers as well, in the form of radiation and noxious chemicals in the air he breathes and in the food he eats. Man's reckless and apparently insatiable desire to explore and experiment has led him to establish a kind of mastery over the world despite his diminutive stature, the delicacy of his offspring, and his lack of natural weapons such as sharp teeth or claws. At each point along the way, the quality of his performance has reflected the validity of his values. In terms of social as well as bodily health he has often been more unadapted than adapted, more sick than well.

HUMAN VALUES AND MEDICAL EDUCATION

Now, what is the impact of all this, or what should it be, on medical education? Should there be courses or should there be an entirely fresh look at our educational processes? To put it another way, what kind of experience is necessary to understand the social sciences and their pertinence to medicine? The learning process includes the acquisition of information and skills and the cultivation of attitudes.

In the past, thinkers who wished to enhance their understanding and sharpen their wits took to travel. At present, the vast majority of students

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[5] Sechenov, Ivan. *Reflexes of the Brain* (Moscow, 1873). Reprinted by Idz-Vo Academy of Medicine, Nauk., U.S.S.R., 1952.

[6] Bykov, K. M. *The Cerebral Cortex and the Internal Organs*, trans. W. Horsely Gantt (New York: Chemical Publishing Co., Inc., 1957).

of medicine have a very narrow framework of experience. State schools educate largely their own constituents. The restricting effects of family background and of economics are usually accentuated by the fact that the student is married and responsible for a family.

By contrast, 50 years ago a young American was likely to travel to several European countries before he would either marry or consider himself prepared for a career in medicine. Then the focus of the medical scientist was on the individual organ, isolated from the regulatory influences of the body, and the highest aspiration of the physician was to be able to correlate his observations and the findings at the autopsy table. Today, when the emphasis is on human ecology and the pertinence of changing social patterns to disease, our students are in no position to cultivate a world perspective.

As Dr. George E. Miller put it, "I am afraid our medical school graduate is in a position of handicap as a physician that courses won't correct." As a time when the strutting and fretting of those in the community for whom he is responsible is making them sick, the physician should spend his hour on the stage in tune with really lasting values.

How can he acquire an understanding of human values, a knowledge of himself, his fellow man, and of the world around him? I have a feeling that the student doesn't need so much to be taught as he does to read and to live. We have students entering the University of Oklahoma School of Medicine whose I.Q.'s are crowding 170 but who have never been beyond the range of football trips or read anything not required by the classroom. We don't need a change in curriculum so much as we need a complete reorientation of our ideas as to what constitutes education.

Most of our faculty members in American medical schools have a primitive education. It is a case of the blind leading the blind. We are able to get along in our currently materialistic and utilitarian society where few people will spend money on books and pictures and where the height of absurdity would be to build something into a building for beauty unless it happened to be functional.

I believe the concern of this meeting has been pretty largely economic. Our medical graduates, with their aesthetic and spiritual avitaminosis are in a poor position to help their patients to a better adaptation. Our utilitarian emphasis does not really diminish the needs of the spirit, as brought out so beautifully in Rene Dubos' recent article in *Harper's.*[7]

Day before yesterday, I interviewed a young woman candidate for medical school. She had been an infant prodigy—was able to read at two, finished college at 18. Much of her extracurricular work in college had been with religious groups. I asked her if she had any ideas about the relationship of religion to health. She said, "I have some ideas about the relation of religion to happiness and of happiness to health." Per-

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[7] Dubos, Rene J. "Beyond Traditional Medicine," *Harper's Magazine* 221, October 1960, pp. 166-8.

haps if our graduating physicians knew more about happiness, including the joys of learning, they would be in a little better position to help those who need them.

Some years ago the campaign literature of the American Cancer Society emphasized that one out of eight die of cancer. A bright newspaper columnist was quick to point out that eight out of eight die. Antibiotics and antimetabolites have prolonged life and prolonged dying. Lobar pneumonia, Osler's friend of the old people, has been all but eliminated. A big job for the doctor is caring for the hopeless and the dying, a job which requires some knowledge of the ways of the world and a sensitivity to and understanding of people. Some of our most distinguished colleagues to the contrary notwithstanding, most young physicians don't pick this up in the air they breathe--at least not outside of New York. I am not sure they would pick it up from courses either.

Research as an intellectual catalyst

I think it is necessary to light the curiosity of medical students, accustomed to being passive partners in the learning process, by their coming in contact with stimulating people who are doing research in the social sciences. Most good categorical emphases that have ended up in the curriculum began from a nidus of productive research.

Johns Hopkins University was wise enough to open its medical school for research five or six years before there was any curriculum to haggle over.

Trends for the future

I see six things growing out of advances in the social and behavioral sciences. I offer them as suggestions for the consideration of medical educators.

1. An earlier career decision, recognizing that any kind of career decision is not immutable and that what's been learned pursuing one direction is not lost in one's handling of work in another. Not only should there be basic work in college and in medical school, but different kinds of educational experience should be available to people going different places in medicine.
2. Establishing a matching plan for admission to medical schools so that an applicant from one state would be more likely to go to school in another and thereby gain a little more life experience and go to different kinds of schools. This assumes, of course, that our schools won't be all alike.
3. Bringing the social scientists into the medical school setting and giving them the facilities they need for their research.
4. More emphasis on the study of animal behavior, especially species

behavior in animals. Perhaps thereby we may get a clearer perspective on some of the things that puzzle us in the behavior of humans.

5. Less emphasis on boards, councils, and committees which must approve programs, institutions, or people—lest the difference Dr. Dael Wolfle considers so precious (see section C) is lost, and lest we discourage important mutations from our currently accepted but ultimately, inevitably obsolete patterns. In section A of this chapter Dr. Frank L. Horsfall, Jr., points out how infrequent these mutations may be. No really great idea or point of view was ever approved of at first. In fact the author of a really important development is lucky to keep out of jail. Some have been killed.
6. The development of a new and very different kind of general practitioner. He probably will not even be called a general practitioner. He will see the patient first and be the diagnostician, evaluator and analyst of the data, and the counselor of the patient. He will rely heavily on us technologists of medicine, the passers of catheters, the readers of bone marrows, the measurers of compliance and tidal volume, and the virtuosi of the milliequivalent. We technologists, or second-class physicians, will be located in centers at least 30 miles apart, surrounded by costly and impressive equipment plugged into digital computers. The surgeons and obstetricians will be there too. With modern means of communication a patient can get definitive help in those areas at a distance of 30 miles quicker than he or she could at the turn of the century when Susie had to go out in the snow and find the doctor who lived in the community. The man in the field, my new kind of general practitioner, will be the really first-class physician. He will be using his head, which contains the only computer that can be mass-produced by unskilled labor.

I will close by referring back to my original point that the social sciences are about where chemistry was 100 or more years ago. Their study will ultimately help save medical education from the danger Lester Evans referred to in his dedication speech at Stanford—the return to a proprietary status, with medical practice drifting into a highly involved and skilled technological service.

But in the words of Robert Morrison, also quoted in the background material for this Teaching Institute, let's not criticize a science for not knowing more than it does. Let it pursue its quest free from pressure for quick results.

C. The Implications of Specialism for University Education

BY DAEL WOLFLE

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Specialization is essential if there are to be persons who are highly qualified in the various fields of science and the professions based on science and who can keep up with the accelerating increase of scientific knowledge. But there need to be various kinds of specialists within a profession, some concentrating in relatively narrow areas of research or practice and others concentrating on synthesis, interpretation, and coordination. To enhance the diversity within a profession, it is desirable that professional schools adopt different goals and train different kinds of new entrants to the professional group.

THE UNIVERSITY of Malaya a few years ago had on its faculty two colleagues whose work on quite similar historic trends resulted in quite different publications. One of these colleagues, C. Northcote Parkinson, has given us Parkinson's law—an amusing summary of his research on the exponential growth of bureaucracy. The other, Derek J. Price, studied the exponential growth of science. While Parkinson concerned himself with the growth of the British Admiralty, Price considered the growth in the number of university degrees granted in science, the number of research articles in physics, the number of men employed in the electrical industry, and the number of scientific journals being published. Price found that these various indices of the growth of science have been doubling about every 10 to 15 years, and that this rate of growth has been going on ever since the time of Isaac Newton.

When scientists were few in number, they could, if they thought about the matter, take real pride in such rapid growth. Now, with a vastly larger number of pure and applied scientists, there is still some pleasure in such a growth rate, but the pleasure is mixed with worry, for neither scientist nor layman can face an exponential growth rate with complacency. It carries too many disturbing implications for the future problems of education in science and the fields that are based upon science. Parkinson made us feel uncomfortable about bureaucratic organization. Price makes us feel uncomfortable about scientific education.

Consider what a doubling time of 10 to 15 years means. By 1970 or '75 there will be twice as much knowledge and activity in science as there is now. Or, looking in the other direction, the student who felt overburdened in 1935 really had it easy by today's standard; there was then only a quarter as much scientific material to learn—or fail to learn—as there is now.

Inadequate educational solutions

In the past, our universities have responded to the growth of science in three ways. In the first place, they trained more scientists, and more men and women to work in the medical, engineering, agricultural, and other applications of science. Second, they made the training of these men and women longer and more arduous by trying to cram into their heads more and more of the growing corpus of scientific and technical knowledge. Third, knowledge was divided and subdivided into finer and finer fields of specialization.

It seems clear to me that we cannot continue much longer to follow all three of these historical methods of responding to the growth of knowledge in science and its applications. We cannot continue indefinitely to train more and more people in the scientific fields without encroaching on the legitimate demands of other areas that also need men and women of high talent. We cannot continue to extend the period of formal education. It is already too long, particularly in medicine. We can continue to divide knowledge into more, and finer, areas of specialization, but this fragmentation is widely deplored and increasingly feared.

Our educational dilemma is easy to state: knowledge will continue to increase; but we have about exhausted the scope of the educational adjustments we have made to past increases in knowledge. This problem is fundamentally the same for medicine, for engineering, for the other professions based on science, and for the sciences themselves.

What can we do? Before trying to answer this question I would like to reject two frequently proposed solutions, for despite their surface attractiveness, they do not squarely meet the fundamental problem of the exponential growth of knowledge.

One of these apparent solutions is to continue to incorporate more and more into the education of a specialist. The temptation to follow this course in medicine is illustrated by the questions scheduled for consideration by some of the discussion groups at the 1960 Teaching Institute. Those questions suggest that it would be desirable for the young physician to know more about psychotherapy, more about basic science, and more about research.

Frank Stanton provided a second illustration of this tendency in his address at the dedication of the new Stanford University Medical Center. Dr. Stanton quoted the following passage from the description of the Stanford program: "The public is making greater and greater demands upon the medical profession, and doctors are assuming that the physician's concern should be not only relief of the patient's immediate complaint but continuous assistance in achieving successful intellectual and emotional, as well as physical, adjustment to his environment and constitution."

These two illustrations—the questions for Institute discussion and the quotation from the description of the Stanford University medical program

—furnish evidence that the physician is willing, even seeking, to accept responsibility for a wider and wider range of factors affecting the welfare of mankind. This aspiration is both laudable and questionable: laudable because of the nature of the relationship between physician and patient, and questionable because of the burden it places on the university, the medical school, and the already overtaxed time of the young man preparing for medical practice.

It seems to me inevitable that the tendency to include more and more within the compass of training of a professional man must inevitably break down. If the wealth of knowledge that might desirably be possessed by a young engineer, chemist, or physician is so great now that we can no longer realistically expect an individual truly to cover any of these fields, what will be the situation 10 or 15 years from now when the sum total of scientific knowledge has undergone another doubling?

The second apparent solution that must be rejected is the denial of specialization in order to return to a broader and allegedly better general education. One example of this proposal is found in the concluding quotation, by Earl J. McGrath, in the background material for Institute participants.[1] Mr. McGrath attributes many of the ills of the world to what he considers the lopsided education provided by institutions that ostensibly provide liberal education but that in reality primarily train specialists.

Difficulties of specialism

In the vocabulary of education, specialism has become a bad word. Of medicine we hear the complaint that doctors treat symptoms or organs instead of patients. Of scientists we are told that one cannot understand the problems or vocabulary of another, and that we no longer educate physicists, but rather solid-state physicists, nuclear physicists, or specialists in other branches of physics. In engineering there is the similar complaint that we no longer train engineers, but rather aeronautical engineers, chemical engineers, and others who know only a part of the broad field of engineering.

There is good foundation for these charges. Moreover, specialization of knowledge means specialization of professional practice, and it is true that specialization of practice has disadvantages for the client. When I work with an architect who is unable to answer a technical question and tells me that he will have to consult his mechanical engineer, I must admit to feeling some irritation. When I deal with the technically trained head of a large printing plant who must confer with some of the specialists on his staff before telling me how a particular problem can be solved, again I feel irritated. When I deal with a physician, the situation

[1] McGrath, Earl J. "The Graduate School and the Decline of Liberal Education" (New York: Institute of Higher Education, Teachers College, Columbia University).

is even more frustrating, for unlike the architect he cannot always take my questions to his consultants; I must myself take my symptoms and ailing organs to the consultant's office, wait for him to see me, and then wait for a decision as to what should be done about my complaints.

Undoubtedly, specialism of practice means irritation for the client or patient and sometimes requires him to spend more time in getting his problems attended to. Yet if the client or patient has any sense about the matter, he would rather have the benefit of the expert information of the mechanical engineer than the less well-informed judgment of the architect, and he would rather have the expert counsel of the medical specialist than the decision of the physician who has not specialized in that area.

Despite the difficulties of specialism, we need specialists, and the easiest way of stating the reason is to say that we need some people who know what they are talking about, not who know in a general or elementary way but who have precise, accurate, detailed, up-to-the-minute information and skill in a particular field. They pioneer in new areas and techniques, and in so doing they serve as guides for the rest of us. Our knowledge is enriched, our practice strengthened, and our judgment reinforced by specialists in patent law, Elizabethan history, renal physiology, photoelectric effects in metal vapors, electrophoretic techniques, cryogenics, auditory perception, and a host of other fields that are sometimes criticized as overly specialized and needlessly narrow.

If specialism is essential, and I argue that it is, the educational task becomes one of devising a curriculum extending through high school, undergraduate years, and professional school that will best prepare the specialist for his future responsibilities.

Cooperation among educational levels

The first general principle that must be borne in mind is that education is continuous. It extends over a number of years, and is given under the auspices of a number of different levels of our total educational system. It follows that in considering the implications of specialism for university education, the universities cannot act alone. Close cooperation among the different educational levels is essential. What the graduate or professional school can do depends upon what the university or college has done. What the university or college can do depends upon what the high school and elementary school have done. These interrelationships work in a forward as well as a backward direction. The educational task of the medical school is related not only to prior education but also to what will happen in the years of internship and residency. And finally, the education of the individual specialist will depend to a substantial extent upon what he does for himself after he stops paying tuition to any school.

Within the total program, and prior to specialization, there must be

more basic education. The basic education provides a background for the wiser choice of an area in which to specialize. It furnishes at least an elementary acquaintance with the interest and work of specialists in other fields, and provides other advantages that have been too often discussed to require elaboration now. Attention should, however, be given to the extent and duration of the period of general education, for on this question there are crosscurrents in educational thinking. The specialized training of an engineer has traditionally been started at about age 18 or 19, but there is now a strong trend toward postponing specialization to the last year of engineering school, or to the years of graduate work or beginning practice. Medical school is customarily entered at about age 22, and medical specialization not begun until five or more years later. In pure science, specialization begins at about age 20 in Germany and the Scandinavian countries, at around 17 in England, and anywhere from 19 or 20 on up in the United States.

If specialization is essential, and again I argue that it is inescapable, we must ask what can be omitted from the education of a specialist that will allow him to enter the practice of his specialty at an earlier age. Let me repeat this question. What can be left out of the education of a future specialist that will not handicap him as a specialist or interfere with his ability to work cooperatively with specialists in other fields? Specifically with respect to medical education, it might be fun to consider the opposite topic to that assigned to the discussion groups. Instead of asking about the desirability of adding knowledge in this, that, or some other field to the education of a physician, it would be interesting to discuss the possibility of deleting this, that, or some other area from the education of a man who expects to concentrate his professional practice in psychiatry, radiology, neurosurgery, or some other medical specialty.

In considering educational problems it is sometimes helpful to look at groups other than one's own. I have long admired the principles on which the training of a professional soldier is based. There are many justified criticisms of the details of military training, but the basic system is excellently planned for the purposes it serves. The prospective officer is first given a basic education to the level of the bachelor's degree. He then begins his professional career as a specialist in one or another branch of military service. If he is well qualified, his specialized practice is interrupted from time to time for more advanced training in his specialty. Eventually, if he proves his worth, he is given the education of a military generalist and becomes a general. Note the term "general." He is no longer a specialist in ordnance, or electronics, or some other specialty. He is a general, responsible for understanding, coordinating, and leading a number of specialists.

We cannot take over the practices of military training into the education of pure and applied scientists. But there are three principles that we can adapt. One is fairly early specialization. A second is integrated planning of the entire educational sequence. The third is the combination of specialists of many kinds, some of whom specialize in being generalists.

Desirability of diversity

The final point I wish to make is that the answer we give to the question of general versus special training need not and should not be the same for all practitioners of any profession. From the standpoint of maximizing the social value of human talent, it will be far more useful to take the greatest advantage we can of differences in aptitude, interest, and motivation by encouraging each individual to concentrate on the things he can do best. Let one man become the best he can possibly become in one line and another the best he can become in another line. Thus we would have the best physicist, the best poet, the best surgeon, and the best dramatist possible. The total value of the talents so distributed will be incomparably greater than would be the value of the same total amount of talent spread more uniformly over the different men and the different abilities involved.

Recommending that each person be helped to achieve the highest level he can reach in the area in which he has the greatest talent and interest is not the same as recommending that every scholar be a narrow specialist. Some, as I have argued, should be specialists, and some should specialize in relatively narrow fields. Physics is generally recognized as the most highly developed science. Within physics we need men whose knowledge and research are highly concentrated, for it is they who are most likely to make further advances in our knowledge of physics. But we also need men of wider interest who can synthesize the knowledge gained by the narrow specialists. We need physicists who are interested in practical applications. We need men with a very substantial education in physics but whose major interest lies in engineering. We need persons who combine a knowledge of physics with a knowledge of some other science, such as physiology, so that the findings of physics can be of aid in the further development of our knowledge of living processes. And finally we need persons who know physics and who are qualified and interested to explain it to college students, high school students, and the general public.

These several types of interest within the field of physics all have their importance. They supplement each other rather than conflict with each other. In fact, diversity among physicists is essential if physics itself is to advance and if other fields of intellectual and practical endeavor are to benefit maximally from those advances.

In the professional fields the situation is comparable. There are practical engineers, scientifically trained engineers, research engineers. Some cover a fairly wide, others a quite narrow range. To some extent the differences are matters of individual interest; to some extent they are determined by the engineering school in which the man was trained. Because of the methods of selection used and because of the differing policies of the engineering schools themselves, their graduates differ; the typical graduate of Cal Tech is a quite different person from the typical graduate of Georgia Tech.

So it is with medicine. There are wide differences among physicians

and there are differences among the kinds of doctors trained by different schools of medicine. These differences exist. I would not deplore them nor try to eliminate them. Rather I would encourage them. For neither in a profession nor in a field of pure science is there one universal answer to the problem of specialism versus generalism. The ultimate answer and the one that will bring greatest collective strength to the members of a professional group is to have within its ranks a wide range of specialists, some who specialize in a limited area of research or practice, some who specialize in interpretation and synthesis, and some who specialize in being generalists. This is in fact the situation that exists. It exists because of differences in individual talent and interest, because of the different policies of training institutions, and because of the different demands that society places on a profession.

The fact that it exists, however, is not enough to make us satisfied. I would conclude this discussion with the argument that the only ultimately satisfactory solution to the problem of generalism versus specialism lies in conscious and deliberate planning for substantial diversity within a professional field. In medicine, this diversity includes opportunities for the general practitioner, the specialist, the public health man, the medical research scholar. In medical education there is room for the school that wishes to educate practitioners and the one that prefers to educate men for medical research, for the school that would like to depart from tradition by encouraging early specialization at the expense of some loss of general medical training, and for the one that wishes to graduate broadly trained physicians who may prefer to work with their more specialized colleagues instead of attempting themselves to reach a high degree of specialization. All of these kinds are good so long as they do excellently what they set out to do.

To say that we need this wide diversity is not an easy solution of the generalism versus specialism problem, but it is the only solution I can see that will enable us both to keep pace with the exponential growth of scientific knowledge and to make full use of that knowledge in the interests of the society we serve.

PART II

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CHAPTER 3

Medical Schools and the Changing Times

Nine Case Reports on Experimentation in Medical Education, 1950-1960

BY PETER V. LEE*

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A. The Climate of Change

By way of introduction to the author's complete study presented in the ensuing sections of this chapter, Section A outlines the ferment in medical education within the milieu of scientific and social change in the decade 1950-60. Better preparation of the medical student so he may provide better medical care and better handling of the problems created by the specialization of knowledge are cited as major trends in recent educational experimentation. In effect this introduction sets the stage for all the chapters comprising Part II, The Dynamics of Medical Education: Their Portent for Medical Care.

THE YEARS since the close of the second World War have witnessed a series of profound changes in science and technology, in medicine, and in the society of which all are a part. The logarithmic growth in scientific knowledge and the rapid pace of social change, among other factors, have altered many aspects of the practice of medicine. Within the medical schools the impact of the changing times has been felt in a number of ways: increase in research activities, accompanied by comparable increases in financial support, particularly from agencies of the federal government; growth of full-time faculties; changes in the nature of patients available for teaching and in the patterns of disease; increase in specialization as knowledge increases; growth of the specialty boards and their influence

*The author of the five sections (A-E) comprising Chapter 3 wishes to express his gratitude to the deans and faculty members of the nine medical schools included in these reports, whose tolerance and hospitality made the collection of material a pleasant as well as an instructive experience. Special thanks are due to Drs. T. Hale Ham, John L. Caughey, Jr., George T. Harrell, Samuel P. Martin, George G. Reader, Fred Kern, Jr., William A. Steiger, William L. Fleming, Thomas B. Turner, John A. D. Cooper, and Lamar Soutter, all of whom gave assistance beyond the call of duty. The advice and wisdom of Dr. Ward Darley deserve special mention. Finally, the author wishes to thank the Commonwealth Fund, which generously made the study possible.

on graduate medical education; growth and strengthening of the social and behavioral sciences; unpredictable and incompletely understood changes in the number and quality of applicants to medical schools; and increasing concern with the need to define the attributes, responsibilities, and educational needs of the physician of the future. In the midst of this climate of change it is hardly surprising that medical schools have been undergoing an unprecedented period of self-scrutiny, reappraisal, definition of objectives, and experimentation (*2, 5, 10*).[1]

Before turning directly to the case reports—accounts of the attempts of some schools to accommodate to the changing times—I should like to preface them with a few remarks on experimentation in medical education. A number of commentators have expressed concern in the past few years with unhealthy trends which they have perceived in medical education (*1, 6, 9*). The common thread running through their remarks is that the study and practice of medicine must be based on a sound scientific foundation. With this one can heartily agree; I will return to this point later. Unfortunately, these writers tend in addition to erect straw men or to emphasize as symptomatic of medical education's ill health some rather trivial aspects of certain experimental programs. Their concern that there is a trend away from the exposure of students to the sound scientific basis on which modern medicine rests is based primarily on their antipathy to certain home-care and extramural preceptorship programs. Where a preceptorship is designed to "show students what real practice is like" I can only agree with them; where, as in most cases, it is planned as an experience to heighten the student's motivation and to emphasize in a setting outside the university hospital environment the application of the principles of scientific medicine, it should be viewed not with alarm, but merely as another technique, more or less successful, to accomplish the same ends to which we aspire in the ward clerkship or outpatient clinic. A program should be evaluated on its merits and on the extent to which it accomplishes its objectives.

Another commonly expressed criticism relates to the allegedly pernicious influence of "outsiders," that is, foundations and others who, remote from the realities of patient care, wish to seduce medical school deans with large grants to try out pet schemes on innocent medical students (*9*). There is no question that people other than medical school faculties have had and will continue to have some influence on the direction medical education will take. (Abraham Flexner, of course, was an outsider, and was supported by a foundation, to boot.) Health and medicine are of concern to everyone; as information about medical matters becomes still more widely disseminated we will undoubtedly see a corresponding increase in public interest in medical education. I submit that faculties should welcome ideas from intelligent, informed sources; I see no danger of subversion from these quarters. Anyone who has had any experience

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[1] Italicized numbers in parentheses refer to the bibliography on page 49 at the end of Section A. Each section of Chapter 3 has a separate bibliography.

in medical school administration is fully aware of the fact that a program, new or old, can work effectively only if it has the support of the faculty who must implement it.

There is, however, one concern of critics of medical education that has not yet been answered by experiments attempted to date. This is that the major defects in medicine today lie not in a lack of consideration for the whole patient or inadequate integration of university and medical education, but in the imperfect application of modern, scientific medicine in practice (*6*). The pioneer studies of Osler Peterson (*8*) represented an attempt to assess objectively certain aspects of the quality of medical practice. This report, one of the most significant and disturbing of documents, should be read and contemplated by every teacher of medical students, interns, or residents, and by everyone concerned with postgraduate medical education. Today, five years after its publication, we still have no published studies of significance either refuting or confirming Peterson's findings. What should have produced a storm of controversy and investigative activity has resulted merely in a few gentle zephyrs of inquiry into some phases of the problem. Are we not concerned with the apparent discrepancy between what we profess and what we practice? Are we not shaken by the fact that "good" students from the "best" schools perform no better after several years in practice than "poor" students from schools with the least reputation? Are we not even willing to test whether or not Peterson's methods were valid by designing additional studies to determine, among other things, whether the poor practices he observed are in fact detrimental to patients' health? Are they differences that make a difference? This, then is an area close to medical education in which I see serious unmet needs: the examination of the quality of medical care and of the validity of the assumptions we now make concerning the basic, scientific preparation for medicine in our medical schools.

Closely related to this question are two others that I believe will be of central importance to medical education in the next decade. These are the problem of student selection, and the study of the process of medical teaching itself. In the first area, a good deal of cooperative effort is being expended through the Continuing Group on Student Affairs and the Division of Basic Research of the Association of American Medical Colleges (*3, 4*). But some of the unsolved problems are not yet, to my knowledge, being explored. In the face of an ever-growing population and an increasing need for physicians, we are witnessing a possible trend toward a diminution in the number and academic quality of medical school applicants. In addition to the obvious need to learn more about the identification of the human, or nonintellectual, attributes of applicants and students, this situation presents us with some serious questions. Should we be concerned that fewer students with A and B grades in college are entering medical schools than was the case in the great years of 1949 and 1950? Did students in these classes that graduated in 1953 and 1954 develop into better physicians than those from years whose vintage had

a less noble bouquet? How bright need a doctor be? We make assumptions, of course, based on the fact that more students fail their medical studies now than was the case ten years ago; but how valid is this as a measure? We have to answer some hard questions concerning the validity of our criteria. This kind of question is closely related to the next area of inquiry, the process of teaching and learning in medical school.

The work of Miller and his colleagues at Buffalo and Illinois (*7*), is leading inevitably toward a critical examination of the teaching of medicine. We medical teachers are beginning to learn that medical schools are not endowed with enough "great teachers" to allow us to ignore the need to define our goals. We are beginning to consider the way students learn (and forget), to use all available techniques to increase our effectiveness, and most important, to evaluate continuously whether or not we are achieving what we hope to achieve in our teaching. This brings us, in circular fashion, back to a point alluded to indirectly earlier: it is of little value to appraise students' performance unless such appraisal can relate realistically to our ultimate goal, the education of effective, scientific, humane physicians.

Having outlined briefly three of the problems I see as being of central importance to medical education in the next ten years or so, I should like to examine some of the significant experiments in medical education of the past decade. These reports are presented in the following sections of this chapter to provide, from one person's experience and observation, some examples of the ways in which nine medical schools have responded to the challenge of our times. The schools whose case histories are described have been chosen because they exemplify some of the trends I consider worthy of emphasis. A great many equally significant experiments have been omitted because of lack of space, because the principle is demonstrated by an example already included, or because I had no personal familiarity with the program. This is by no means a comprehensive review. It is hoped here to include enough detail about a small number of experiments so that the reader can obtain a fairly clear idea of the goals as well as the methods of approach in each of the institutions to be reviewed. Although an attempt has been made to be objective, the reader should be warned that I have included these experiments because I believed them worthy of review; the selection has thus biased the reporting.

The reports are presented in four separate sections, but the cases are, in my opinion, primarily the result of two major movements or trends that have dominated experimentation in medical education over the past decade. The first has been an increasing concern with the necessity of better preparing the student for his fundamental task in medicine, to deal effectively with patients. Emphasis on the needs of the learner has been with us since Dewey, and is of course neither new nor revolutionary. However, the attempt to utilize all the knowledge at our disposal to give students a better understanding of patients' needs in order to provide the high-quality scientific medical care that is our ideal has appeared in one way or another as a major consideration in practically all the programs

reviewed in this report. The second factor has been a concern with ways of dealing effectively and selectively with the increasing body of specialized knowledge essential to the understanding of modern scientific medicine. Specialization and compartmentalization of knowledge, alluded to briefly above, are felt on every side and are of central importance to the continuing advance of medicine. The attempts to integrate university and medical education, to improve premedical preparation, and to provide coherent and correlated teaching in the medical sciences all relate to this challenge.

In passing, it should be stated that the decade 1950-60 must be considered somewhat loosely; planning at Western Reserve and Colorado preceded this period, and the admission of the first class to the new programs at Boston and Northwestern followed its close. Nonetheless, in my opinion, the selection made here, while admittedly a personal one, is a reflection of some of the major concerns of medical educators in the ten years just past.

The reports are based upon personal observations made on visits to the schools, conversations with faculty members, students, and administrators, and reading of published papers and much unpublished material which has been graciously provided by the schools concerned. Although the reports have been checked for accuracy, the author must of course take full responsibility for any errors which remain. Comments and conclusions, unless otherwise identified, are obviously my own.

The case reports are grouped into four categories, each a separate section of this chapter:

B. Integration of University and Medical Education: page 50
C. Teaching Comprehensive Medicine: page 72
D. Reorganization of the Medical Curriculum: page 101
E. Founding a New Medical School: page 117

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B. Integration of University and Medical Education

There are several reasons for the current interest in exploring a closer integration of the university and medical school phases of the education of the physician. These include the desire to shorten the curriculum, to bring the medical school closer to its parent university, to improve the over-all educational experience for the student, to select students for the study of medicine at an earlier age, and to strengthen the education of future teachers and investigators in the basic medical sciences. The special programs at Johns Hopkins, Northwestern, and Boston University are surveyed in this section.

ALTHOUGH THE RECENT trend toward a diminution in the numbers and quality of medical school applicants has so far been largely a regional problem and has not affected all medical schools, there is concern about the problem even among those schools which have not yet encountered it. There is no documented evidence that the eight years of formal training discourage well-qualified and well-motivated students from studying medicine; there is, however, a widely held opinion that this might be the case (*3*). The shortening of the educational period as a device for recruiting able high school graduates into the study of medicine has therefore been one consideration in the development of the new accelerated programs. An additional goal related to shortening per se merely concerns the question of whether our eight-year curricula are too long, repetitious, inefficient, and wasteful of time and manpower. Experiments in shortening could thus serve a purpose other than recruitment of the gifted; they could enable medical faculties to determine to what extent all or most medical students might be enabled to spend less time in the attainment of their degrees (*13*).

Medical education in the United States has developed from a complex heritage. The hospital medical schools of England and France were less influential models for the development of the proprietary medical schools which sprang up during the nineteenth century than was the early American apprenticeship system. The German university tradition has had its influence too, most notably at Johns Hopkins, which was founded on this principle, and through the efforts of Abraham Flexner (*5, 6*). The flowering of the university-oriented medical schools subsequent to the Flexner Report and the memory of the stigma of the proprietary schools have caused medical educators to be sensitive about their spiritual (and in many cases geographic) separation from their parent universities. With the rapid growth of knowledge in the natural sciences, and more recently in the social sciences, the medical schools have seen ever more clearly the practical contributions to medicine and medical education that can be made by university scholars. New curricula which, through shared responsibility for the instruction of medical students, bring medical and liberal arts faculties into contact, are one of the means of bringing the universities and their medical schools closer together (*12*). Stanford has achieved this union corporeally as well as spiritually by providing a partly inte-

grated university-medical curriculum and moving the school of medicine bodily onto the university campus (*10*).

The desire to improve the educational experience has several aspects. College and university educators fear that this aim may be largely due to the conceit of medical school people who have complained from time immemorial about the defects in the premedical preparation of their students. (In like manner, of course, college faculties criticize the high schools, and they in turn the junior highs, and so *ad infinitum* or at least *ad infantiam*.) The ability to utilize more fully the aptitudes and motivation of specially selected students by offering accelerated and "enriched" courses is an obvious advantage of a program that chooses students from the cream of high school graduates. The control of the entire continuum would of course enable the faculty to plan a curriculum that would minimize unwanted repetition and assure continuity in the threads of biology, chemistry, and the social sciences for six years.

The desire of some students to begin their medical education, or what is labeled medical education, at an early age is understandable and probably in many cases laudable. The competition for grades in college and the attempts on the part of premedical students to select programs and activities that might favorably influence admissions committees are avoided by early selection. Students thus armed with the assurance of a position in a medical school can concentrate on learning and understanding rather than on competing with their fellows for the high examination marks they envision, probably realistically, as essential for admission to the medical school of their choice. It has been reported by college faculties that the medical admission process has an adverse effect on the performance of premedical students, at least during the senior year, when applications, interviews, acceptances, and anxieties are at their peak. On some college campuses the highly competitive premeds show little evidence of those traits of humanitarianism, compassion, breadth of educational background, or even integrity, which are so conscientiously sought by the admissions committees. Whether early selection would correct these evils or merely reduce the pool of capable four-year applicants remains to be seen. Of course, such programs might well merely heighten the competition for grades and high scores on achievement tests in high school. The requirements for advanced placement would probably put pressure on the secondary schools to strengthen their offerings.

As far as the goal of stimulating interest in careers in the basic medical sciences is concerned, it is hoped at Johns Hopkins that the special programs for students admitted after two years of college might provide enough flexibility and intensity of preparation so as to improve the training in the basic sciences. At both Boston and Northwestern students may deviate from the usual progression for additional work in the medical sciences; because of the saving of time effected by the shortening (primarily in the premedical phase), students may be more willing than they are at present to pursue one or two additional years of study in a preclinical medical science.

TABLE 3.1
COMPARISON OF MAJOR FEATURES OF PROGRAMS AT JOHNS HOPKINS, NORTHWESTERN, AND BOSTON UNIVERSITIES

Features of programs	Johns Hopkins	Northwestern	Boston
Year program instituted	1959	1961	1961
Students admitted after	2 years college	high school	high school
Length of special program	5 years	6 years	6 years
Minimum time from high school to M.D.	7 years*	6 years	6 years
Number admitted annually to special program	35	25	72 (whole class)†
Number admitted annually to traditional program	55	100	(-)‡
Special courses offered			
a. general chemistry	(-)	x	x
b. organic chemistry	x	x	x
c. physical chemistry	x	x	x
d. physics	x	x	x
e. mathematics	x	x§	x‖
f. biology	(-)	x#	x
Elective quarters	last three years	last two years	last year only
Total weeks of elective time (last four years)	30 (3x10)	24 (2x12)	16 (1x16)

*Although an occasional student may complete medical school in 6 years after high school, the M.D. in such cases will be awarded on completion of the internship.

†Only 40 were admitted in 1961, the first year of the program, but it is intended that the entire class will enter directly from high school.

‡Only to replace those lost during the first two years; estimated 10-20.

§With physics course.

‖With physics and chemistry courses.

#In second year; chemistry, physics, and mathematics are prerequisites.

COMPARISON OF MAJOR FEATURES OF THREE PROGRAMS

The new curricula at Johns Hopkins, Northwestern, and Boston universities are considered separately and in some detail in the following pages. By way of introduction to these three case reports, it can be said that each program, while having many features in common, demonstrates certain differences that have resulted from the differing local goals, opportunities, and traditions. Some of the major features are summarized in Table 3.1. Integration of medical and university education was a primary goal of all three programs; as will be discussed in more detail in the ensuing pages, close scrutiny reveals that each school has developed a program uniquely its own, in response to its own needs. (The Hopkins program is now in its third year; the others are in their first.) Although

all three offer the theoretical possibility for a student to complete medical school in six years after graduation from high school, this will be accomplished only rarely at Hopkins. At Northwestern about one-fifth of the class will do so; at Boston University, the great majority. Students who have completed high school, usually with advanced placement (college credit) in certain areas, will be eligible for admission directly to the combined six-year curricula at Boston and Northwestern. Johns Hopkins requires two years of college and the completion of a year of chemistry and biology for admission to its five-year program.The students who enter the regular programs (to join Year II of Hopkins or Year III of Northwestern or Boston) will ordinarily have the bachelor's degree and the usual premedical course requirements.

The school year is prolonged at Boston by the elimination of summer vacations; the 40-week school year at Johns Hopkins represents an expansion from the previous curriculum. Northwestern's school year remains unchanged until the last two years, in which the summer vacation is eliminated; 12-week elective quarters are available in Years V and VI. Boston provides a 16-week elective trimester in the last year; Hopkins offers elective quarters of 10 weeks during each of the last three years. All three programs involve the offering of most of the instruction in the liberal arts and premedical sciences on the university campus, although Johns Hopkins' courses in organic and physical chemistry and biomathematics (calculus) are given in the medical school. The premedical science courses are modified in all three institutions. The only special course at Johns Hopkins is an intensive course in organic and physical chemistry. At Northwestern and Boston University the courses in chemistry, biology, and physics have been completely redesigned for this group of students. Humanities and the social sciences are extended in various ways into the medical years in each of the programs.

The Johns Hopkins program is primarily concerned with providing ample amounts of free time for electives or supervised semi-independent research; there is a strong orientation toward student research, particularly in the preclinical departments. The Boston program appears to emphasize acceleration primarily, with improvements in premedical science courses and minimal alteration in the existing medical phases of the curriculum; there is a limited amount of time for electives and independent work. The tutorial program is unique to Boston. At Northwestern the new curriculum is to serve as a pilot study both in acceleration and in new ways of teaching the biological and physical sciences. More students may enter directly from high school in the future if the experiment proves successful. The limitation of the elective quarters to the clinical years might suggest that elective activity and independent study are to be encouraged primarily in clinical disciplines. Opportunities for work in the basic science departments are provided during summers. At all three schools students are encouraged to utilize the flexibility of the programs to follow their own interests with respect to taking additional years of study in the basic sciences.

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE
REVISED PROGRAM OF MEDICAL EDUCATION

In 1959 Johns Hopkins initiated a revised program of medical education. The new five-year program allows entry into the first year to properly qualified students who have completed two years of college, with admission to the second year still restricted to students who have the bachelor's degree. By using elective periods and summer vacations for completing required clinical work, some students may shorten the educational period by an additional year, receiving the M.D. on completion of internship; such acceleration must receive special approval, and is unlikely to be a common occurrence.

Background and objectives

The new educational program at Johns Hopkins evolved as a result of several phases of faculty committee activity. In the early 1950's a committee was appointed to review the status and activities of the Johns Hopkins medical institutions with the view to delineating the educational objectives, evaluating the educational program, and considering possible modifications based upon the findings. By 1955 it became apparent that a complete evaluation of past experience was not feasible in the time available to the committee. Attention was then given to suggesting possible remedies for what were considered to be the major defects in American medical education. As defined by the Johns Hopkins group, these were: first, the unnecessarily long curriculum from high school to M.D., which tended to discourage many able students from entering the study of medicine; second, the sharp division between liberal arts and medical education; and, third, the relative decline in medical school faculty strength in the basic medical sciences (*2, 13*).

As the detailed studies proceeded, it became evident that the Johns Hopkins faculty considered the shortening of the post-high-school span of education to be of less importance than the goal of strengthening the traditional Hopkins education in the direction of stimulating individual student initiative. This attitude (along with faculty opposition to one of the most radical of the original suggestions, the substitution of a rotating internship for the standard fourth-year clinical clerkships) led to the adoption of somewhat more moderate curricular changes than were originally contemplated.

At present, Dean Thomas B. Turner considers four objectives to be most significant: (1) to bring about a closer integration of the liberal arts and medical education; (2) to provide flexibility in the curriculum so that full advantage may be taken of individual initiative, interests, and aptitudes; (3) to enable some students to get started in their medical education at Hopkins early—to provide an opportunity for able, impatient students to "get at it"; (4) to allow a limited number of students to accelerate their medical education (*11*).

Admission to the program

The students who enter Year I of the new program are required to have two years of college, including at least one year of general chemistry, and one year of general biology or zoology.

All students accepted into Year II (corresponding to the first year of a standard program) must have completed at least two years of chemistry, one year of biology, one year of physics, two years of a foreign language, and a bachelor's degree before beginning medical studies. (Additional courses are recommended but not required.)

In the first two years of the program's existence, 1959 and 1960, 25 students were accepted into Year I. It is expected that a maximum of approximately 35 students will be accepted each year. The total class size from Year II onward will be 90 students. Thus, approximately 55 can be accepted into Year II. These ratios could be altered somewhat by circumstances, such as an unexpected increase or decrease in the number of well-qualified applicants to either Year I or Year II. It has been the experience so far that the students who were accepted into Year I were equal in academic aptitudes and performance to those accepted into Year II for the same year. So far, a few students with three years of college preparation have elected to enter Year I; it is anticipated that such students will not comprise a significant number in future years.

The program

The five-year program (the last four of which are comparable to the standard four medical school years) consists of 40-week academic years with elective 8-week summer sessions. Year I is composed of two 20-week semesters because of the necessity for this program to coincide, at least approximately, with the 16-week semester system on the Johns Hopkins University campus. The first semester begins four weeks before the regular college semester, and the second semester ends four weeks after the close of the college semester. Years II, III, IV, and V consist of four 10-week quarters.

Year I

The two semesters of Year I are devoted primarily to chemistry, physics, biomathematics, English, history, and philosophy. The chemistry and biomathematics courses are taught in the school of medicine, while the physics and humanities are taught on the university campus. Save for a single weekly seminar, the students have all their afternoons free. No specific elective courses are scheduled during these periods, although the students may by special request register for electives. In general it is intended that this free time be used for study or independent work. The first semester of the chemistry course is devoted primarily to analytical and physical chemistry, while the second is an intensive organic chemistry course. It is the intention of the instructors to present rigorous, "pure"

courses, rather than material oriented toward medicine. These are taught by highly qualified specialists in the fields, not as extra courses by biochemists or others in the school of medicine. (The organic chemist and physical chemist responsible for this course are regular faculty members in the department of physiological chemistry in the medical school, however.)

The course in biomathematics is primarily one in differential and integral calculus, with emphasis on applications in the medical sciences. Students who have completed calculus prior to admission to Year I are exempted from this course.

There is a period of four weeks following the close of the second university semester during which time the chemistry course is the only one given for the Year I medical students. This period may be used for independent work or for special elective courses offered by the medical science departments.

Year II

The four 10-week quarters are devoted to block-system instruction. Biochemistry occupies the first quarter. Two days each week, following one morning lecture, are free for independent work. The second and third quarters are devoted to the study of anatomy, including cellular biology, gross anatomy, embryology, histology, neurology, and genetics. Three afternoons each week are free for independent activity. In the fourth quarter, physiology is studied; as in the first quarter, two full days are available for free time or independent work each week.

Throughout Year II, Saturday morning classes in the history and philosophy of science and in social science and medical psychology are held. No elective courses are offered during the first two quarters. Students may take electives during the third and fourth quarters, or may begin supervised research activities during the free periods. Many students do independent projects related to coursework during these periods. The availability of day-long blocks of free time during an intensive ten-week exposure to a discipline such as biochemistry or physiology gives interested students ample opportunity for pursuing these subjects in some depth.

Year III

The first 15 weeks of Year III (one and one-half quarters) consist primarily of pathology and microbiology. The next one and one-half quarters (15 weeks) offer introductory clinical courses, physical diagnosis, laboratory diagnosis, pharmacology, and public health. Although there are two afternoons a week free during the first 15 weeks, very little free time is available during the second 15-week period.

The fourth quarter of Year III (10 weeks) is completely free for elective work. During this quarter the student chooses a department and a preceptor with which to associate himself for his independent study. He may undertake a library project or chart review, but there is rather strong pressure on him to engage in some form of independent laboratory

research. The student will have been exposed to introductory material in most of the clinical departments by this time and may choose from clinical or basic science areas for his research activity. Since the institution of the new program, an increasing number of students have elected to do their research in basic science departments. (As Johns Hopkins has traditionally offered block-system teaching and ample amounts of free time for students, the really new factor in this situation is the provision of the elective quarter while the students are still in their preclinical years.)

Year IV

Introductory clerkships in medicine, surgery, obstetrics and gynecology, and pediatrics comprise the required services. The ten-week elective quarter may occur at any period during this year. The time at which the free quarter occurs is usually assigned, but in certain cases the student may elect to take his free quarter at a specific period if his research program justifies it. Students are encouraged to continue the research activities they began during the elective quarter of Year III. The majority of the students tend to do this. (Taking a different elective each year is discouraged by the faculty; tangible encouragement of the preferred procedure is given by restricting fellowship funds to students who have already demonstrated their aptitude for research in the area in which they wish to work.)

Year V

The clerkships in Year V consist of services in medicine, surgery, psychiatry, neurology, and pediatrics. As is the case in Year IV, the elective quarter may occur at any time during the year.

Elective time and accelerated program

The elective quarters in Years III, IV, and V are integral parts of the curriculum. They are designed to provide the students with an opportunity for advanced study in fields of medical science of their own choosing. Responsibility rests with the student to choose a department and a preceptor. Integrated courses of study in several departments can be arranged, but there still must be a "home" department. Continuity in the elective program is considered highly desirable; some departments accept students for elective work only if the students plan to continue their work at least through Year IV. In general if the student is doing a research project, he is expected to spend at least half the time during the 10-week quarter in the laboratory. Students are encouraged to devote this elective period to work in one of the basic sciences or at least in a basic science division of a clinical department.

As a rule, elective courses can be taken only during the elective quarter. The elective quarter can be taken at another institution if the student so desires, and if a program acceptable to the dean's office has been worked

out; the student must still have a home department and home preceptor at Hopkins.

It is possible for a limited number of students in each class to accelerate their program of study by taking required clinical courses during the elective periods of Years III and IV and one summer session. A student who elects (and is selected for) acceleration can complete the required course work 12 months earlier than his classmates, but he will receive his M.D. only after completion of one year of additional study, either in an internship or research fellowship.

Another application of the principle involved in acceleration would be the use of the elective periods to catch up after a year of special work or study taken in a basic science department at the end of Year III. Acceleration would then enable such a student to graduate with his class. In this way the recipient of a post-sophomore research fellowship would not be penalized by having his graduation delayed, as is usually the case.

Under certain circumstances, permission to accelerate may be granted to students who wish to begin their clinical training one year earlier than normal. The faculty at Johns Hopkins stress their belief, however, that the accelerated program is not designed as a quick method for embarking on the practice of medicine after a minimal period of training. It is evident that the student must be able to justify his reason for acceleration in terms of his own career aspirations. At present, only one or two students are engaged in the accelerated program.

Discussion

It is not necessary to question the validity of the basic premises on which a school bases changes in its educational program, but merely to understand them. Differences of opinion exist as to the identity of the central questions facing medical education. This need not lessen the acceptance of the achievements made by a school in moving toward solution of the problems it perceives as being significant. One might well question whether the alleged weakening of basic science departments in medical schools is truly one of the major problems facing medical education today; yet there can be no doubt that the Johns Hopkins program is attracting able students of medicine into these areas. This effect, if it persists, is bound to be beneficial to medical schools everywhere.

The early objective of stimulating students toward careers in basic sciences is fostered by three aspects of the new program: first, the provision of blocks of free time early in the curriculum; second, the block system of teaching whereby medical students are exposed to intensive study of one discipline for a 10-week quarter and are provided with liberal amounts of concurrent free time; and third, the early start gained by many students, thus presumably making it easier for them to drop out of school for a year of advanced study in one of the basic medical sciences. The flexibility provided by the free quarters may prove valuable also, but it is too early to assess its role in attracting students into careers in

the basic sciences. The increasing availability of student research fellowships is being utilized actively at Johns Hopkins to keep talented students in research as much of the time as possible.

The objective of more closely integrating the medical school program with the liberal arts is reflected in Years I and II. In Year I the medical school offers certain "premedical" courses concurrently with liberal arts courses on the university campus. This serves as one way of emphasizing to the students the unity of their educational program. In Year II, the intensive course in the history and philosophy of medicine and science is designed to provide a liberalizing influence during the otherwise heavily scientific year.

That these attempts at integration might also have negative effects is apparent in the concern of some college and university educators that Johns Hopkins is fostering the departure of the most able students from college campuses before they have completed the culminating years of their liberal arts education. The implication that the preparation of these students in chemistry can be improved by giving calculus, organic chemistry, and physical chemistry in the medical school has not really strengthened integration in this sense either. The division between medical education and the liberal arts does not necessarily call for a solution that draws some of the best students away from the college campuses at the end of the sophomore year; on the other hand, the provision of a very high-quality educational program such as this for a small number of select students can hardly be criticized.

The question of acceleration has, of course, attracted the greatest public interest, since the problem is of concern to many laymen and medical educators. As was mentioned in the preceding section, acceleration is actually only a minor feature of the Hopkins program at present. The concept was modified considerably between the time of its initial acceptance in 1957 and the implementation of the new program in 1959. The rather radical attempt to shorten the program by a year by converting the Year V clerkship into a rotating internship under university supervision was, in the last analysis, not acceptable to the faculty. Its elimination, by virtue of the objection of some clinical departments, was only partially a reflection of the lack of faculty concern with the urgency of shortening the total program. The introduction of senior-student rotating interns to services that have traditionally been staffed by carefully selected straight interns would have created many practical problems in the Johns Hopkins Hospital. It is obvious that when long-range objectives come into conflict with everyday realities, such as running a tight service, certain compromises must inevitably be made. In this case, the compromise was in the direction of making minimal changes in the clerkships and rejecting the additional year of acceleration.

A comparison of the current schedule at Johns Hopkins with that in effect in 1955 (before the program was adopted) reveals that (with the exception of Year I, which of course did not exist) the total number of elective hours has remained almost constant, while the amount of re-

quired work has actually increased. This is mainly the result of lengthening the school year from 32 to 40 weeks in order to organize the elective time in usable 10-week blocks. (In 1955, in the four regular medical school years, there were approximately 3600 required hours of instruction and 1800 hours of elective or free time. Under the new program, in Years II, III, IV, and V there remain about 1800 hours of elective or free time, but there are now several hundred additional hours of required work.) It should be emphasized that it is the organization of the free or elective periods into usable blocks of time that is significant. Free time in day-long blocks or in 10-week quarters is useful for a student who wishes to pursue independent study; an equal or greater amount of free time scattered throughout the week or the year in one- or two-hour bits is of almost no value save for relaxation, reading, or studying of assigned work. Weekends and summer vacations are of course essential for recreation and rehabilitation. It is often forgotten, however, that free time that is intended to stimulate student initiative or interest in independent intellectual activity must be provided during times when the faculty is fully available to provide the necessary stimulus and encouragement. I see no reason to criticize the Johns Hopkins faculty for adding to the amount of required class and clerkship hours (in spite of their initial concern with the unnecesary length of the program) when at the same time they provide free and elective periods in such a useful and intelligent manner.

Now that the program is actually in operation, its most significant aspect is the stimulation of independent work on the part of students and the encouragement, indeed almost the requirement, that students participate actively and in considerable depth in research activities in some discipline. The large amount of elective time and its arrangement in Years III, IV, and V in blocks of at least 10 weeks in length are largely responsible for this. When highly selected students are exposed to sound scientific education, and then given ample time in which to follow their interests, it is inevitable that a good many of them will have an unusually profitable experience. The timing and arrangement of these elective periods seem of paramount importance.

Johns Hopkins will continue, as in the past, to utilize independent initiative on the part of the student most effectively *(8)*. It will undoubtedly continue, by virtue of its attractiveness to a high caliber of students and its stimulating academic atmosphere, to meet what many of its faculty consider to be its main responsibility—that of preparing its graduates for positions of leadership in academic medicine.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL PROGRAM FOR MEDICAL EDUCATION

Northwestern University's six-year program leading to the M.D. degree was begun in the fall of 1961 for a group of 25 selected students entering directly from high school. The first two years are given on the Evanston

campus of the university and the last four years at the medical school in Chicago. The program is designed for highly talented students who can qualify for advanced college placement on the basis of superior achievement both in high school and in examinations.

Background and objectives

For a number of years there has been a desire on the part of the faculty and administration at Northwestern to effect a closer relationship between the medical school in Chicago and the university, 15 miles away. The concern on the part of many faculty members with a number of problems in medical education prompted the formation in 1956 of a study committee on medical education composed of members from the College of Liberal Arts, as well as the Medical School (*4*). The committee members saw the need to examine the entire sequence of education after the secondary school. They were concerned with the rapid accumulation of knowledge in medicine and the related sciences, the increasing length and compartmentalization of the education of the physician, and the expanding conception of the role of the physician in our society, especially in relation to the maintenance of health and the prevention of disease. They also took cognizance of the increasing competition from other fields for the limited pool of superior students, recognizing that medicine no longer occupies a unique position with respect to prestige, satisfaction, and remuneration, that the length and cost of medical education are far beyond those of similar fields, and the number of college students seeking medical careers seems to be diminishing as the need for physicians grows *(3)*.

Having identified the major problems, the committee outlined a set of goals for medical education at Northwestern which might help provide some of the needed answers. The committee agreed early on the general aims of improving premedical education and eliminating the sharp division between premedical education and medical education. The former was to be attempted through revision of courses and by special selection of students, and the latter by introducing at the college level materials of study that have a direct relevance to the study of medicine and by continuing into the medical curriculum certain studies ordinarily available only in the college. At the same time, it was considered appropriate to explore the possibility of shortening the curriculum. The committee emphasized, among other things, the provision of a fundamental core of knowledge and the integration of related material. Other goals were to stimulate habits of critical thinking, appreciation for the scientific method, and positive attitudes toward continuing self-education. The over-all objective, then, was a continuous and coordinated program, beginning with the freshman year of college, which would never lose sight of the educational needs of the physician.

The committee made a detailed study of the present sequence and content of premedical and medical curricula at a number of universities.

They concluded initially that talented students should have a special program designed for them. Because it was agreed that students from other colleges would continue to be admitted to the medical phase of the program, the over-all plan would have to be divided into two clearly defined segments. Provision would also have to be made for flexibility so a student could branch out into other areas of study after completing the premedical phase, or even the preclinical phase, of the curriculum.

In addition to considering the nature of the student and his prerequisites, the committee turned its attention to the specific phases of premedical education. The students' education in chemistry was to be extended to include aspects of physical chemistry. The necessity for a better foundation in mathematics was seen. The courses in biology, chemistry, mathematics, and physics were to be organized both in content and sequence in a fashion which would be most effective for medical training. (For example, if every biology student had previously completed a college course in chemistry, a more sophisticated program could be offered; likewise, if every student of physics had the basic ideas of trigonometry and calculus, the teaching of physical principles could be carried out more easily.)

The social sciences would be presented in an integrated medical course to make available concepts by means of which the student could understand the effect of psychological and social factors on the occurrence of illness and appreciate the impact of disease on a patient or family. The place of the humanities in the education of the physician was to be determined in large part by their usefulness to his professional preparation. The essential value of the humanities to medical education, in the committee's view, is their concern with the uniqueness of the individual man. Further, the humanities could serve an important function in cultivating the student's ability to communicate thoughts and ideas.

It soon became evident that the educational program at the undergraduate level in the university would profit from this study; as a result, many faculty members in the departments of biology, chemistry, and physics cooperated closely with medical faculty representatives in the planning of new courses.

The premedical phase of the student's education was not the only area subjected to study. For several years the faculty had been making modifications in the medical curriculum, particularly in the direction of providing increased interdepartmental collaboration in the preclinical years. The clinical program has reflected consideration of the goals mentioned above in the provision of increased opportunities for free time and elective work. The teaching of comprehensive medical care is being introduced through a special clinic in the fourth year *(7)*.

Admission to the program

Twenty-five carefully selected students will be admitted annually to the new program. Approximately 100 will enter in the usual way, after

four years of college. Since acceptance into the first year will imply a strong measure of assurance that the student will complete his medical study, the first two years will not be regarded primarily as a demonstration of admissibility to medical school. Without this assurance of medical admission, it is unlikely that many applicants would choose the more rigorous and demanding program even though it promised the saving of one or two years; the competition for medical school admissions already tends to cause some students to shun courses in which they cannot reasonably expect good grades.

Students applying for the program are required to have four years of high school English, four years of high school mathematics, one year of high school chemistry, and one year of high school biology, in addition to at least two years of foreign language. These are minimum requirements, since most will be expected to qualify for advanced placement in chemistry and mathematics, as well as one of the humanities. Applicants are required to take the College Entrance Examination Board Scholastic Aptitude Test and the Achievement Tests in English composition, advanced mathematics, and chemistry. Other special examinations may also be given. (The requirement for advanced standing could be met in special cases by the completion of a beginning level college course in the summer between high school graduation and entrance to college.)

The small size of the student group would permit close evaluation of achievement, maturity, personality, and motivation. At the end of Year IV (the second medical year), the student could be granted a B.S. degree in medical sciences and could qualify for admission into a graduate program leading to the Ph.D. if he wished. Students could leave the program and enter the usual bachelor's degree program after two years without serious loss of time in most areas. The flexibility thus allows a student to progress at a rate that his capabilities and interests dictate.

The program

Years I and II

Year I includes a combined mathematics-physics course, a special chemistry course, English, and electives. The science courses will involve approximately one-half the students' time. In Year II, students will continue the study of chemistry, and will take a special biology course, human behavior, and electives.

The combined mathematics-physics course is modeled after courses now given at Amherst and Harvard. The aim is the presentation of key concepts and theories and the development of intellectual tools for orienting the students in science. Chemistry is taught concurrently with physics; the general chemistry course in Year I builds on the students' knowledge of high school chemistry. The stress is on general concepts, carefully chosen; there will be no attempt at encyclopedic coverage. In Year II the chemistry course will continue to occupy one-fourth of the students'

time for the whole year, and will include a consideration of the more physical approaches to chemistry, involving energetics, kinetics, and equilibria, with emphasis on the areas basic to the study of biological systems. Organic chemistry of compounds of biological origin will form a part of this course, and will represent the application of concepts treated in general chemistry to the area of interest of the biologist. The biology course in the second year will have the advantage of being based on course content of the already completed courses in chemistry, physics, and mathematics. The emphasis will be analytical and conceptual rather than descriptive. Knowledge of the subsequent educational program should enable the faculty to give more attention to basic concepts of living systems, evolution, genetics, and embryology, and less to complete coverage of material.

An introductory course in the behavioral sciences is already available at Northwestern; it incorporates the combined approaches of psychology, anthropology, and sociology. This course is not now a premedical requirement and is not regularly taken by premedical students at Northwestern. The year of English would in most cases be more advanced than the usual freshman composition course because of the advanced standing these students would have attained.

From the standpoint of content, the new program enlarges the premedical requirements to include mathematics and physical chemistry. It also brings greater relevance into biology, introducing a more analytical and theoretical approach than the traditional descriptive courses do. Additional faculty have been provided through a grant from the Commonwealth Fund to implement the new program.

Years III, IV, V, and VI

The students who enter the traditional medical years from Year II of the special program will take the same curriculum as those who will enter after the usual college preparation. The integrated program is considered as an alternative plan to prepare outstanding students for medical school in two years, rather than the usual three or four. Consideration is being given to the optimal sequence in which material is presented, elimination of undesirable overlapping, and increasing the efficiency of the teaching program. At present the block system is used, particularly in the first year. There will likely be some modification of this in the future as well as a greater emphasis on the behavioral sciences and an increase in the amount of clinical medicine introduced during the first two medical years (Years III and IV).

There has been discussion of a proposed combined laboratory course which would replace much of the present time devoted to departmental laboratory teaching in the basic medical sciences. The objective of this would be to introduce the student to the major experimental techniques, which he could apply in the later part of the course in a laboratory project. In courses such as gross anatomy and pathology, where the laboratory work is an integral part of the subject matter, the material may not lend itself

easily to integration into a combined laboratory exercise. New techniques and approaches are under discussion in these areas also. Multidiscipline home laboratories for medical students will be completed in 1963. The curriculum for Years III and IV is still under discussion; further developments in the direction of additional interdepartmental collaboration in teaching may well occur during the next few years.

In the clinical years didactic instruction has been almost eliminated. Flexibility, by virtue of a free 12-week quarter in the present third and fourth years (Years V and VI of the new program) will be preserved. This elective time may be taken in two separate blocks, or as a single six-month period. Students may use the time for research, for elective clerkships, or for graduate study in one of the basic medical sciences. In addition, the new clinic for comprehensive medical care is to be extended through the two clinical years. Seminars in the humanities will also be presented during this period.

Discussion

The experimental program of Years I and II, which would prepare outstanding students for medical school in two years rather than the currently accepted minimum of three or four, is not as radical from the standpoint of acceleration as it might at first glance appear. These students, who have advanced standing in several disciplines on admission to college, would probably be able to accumulate the required number of hours and fulfill admission requirements to many medical schools in two years even under usual university programs. The two really important innovations are that this group of students receives early acceptance to medical school and undertakes a specially designed premedical program in chemistry, physics, mathematics, and biology in a coordinated sequence.

Although the number of able students specifically attracted to medicine by virtue of this program might not be large, the impact of this type of experiment on premedical education could be profound. The teaching of physics, chemistry, and biology, particularly biology, could be greatly improved by this arrangement. The limited size of the experimental group will permit optimal student-faculty contact in the special premedical courses.

The program for Years I and II can of course be instituted independently of any alterations in the program for the last four years. Theoretically, students from the experimental group could enter either the present medical school program, a new curriculum for the special group, or a new curriculum for the entire medical school class. Between now and the fall of 1963 final decisions will be made on this score. The present view, however, is that the experimental students will not be given a special program once they are in medical school. They will merely be two years ahead of schedule, and possibly better prepared for some of their medical work.

The new curriculum is shorter by one or two years than the standard

program, more intensive by virtue of the advanced nature of its science courses, and possibly more narrow by virtue of the reduction in available time for nonmedical electives. It is hoped, however, that students who can demonstrate college standing in English and foreign language (for example, by examination) would be eligible for advanced humanities courses. Their own aptitudes and interests could lead them into a broader educational experience than less talented students would attain in four years of college.

The success of the experiment is contingent, among other things, upon careful selection of candidates and upon the guarantee that they will have a position in the medical school class, assuming maintenance of satisfactory academic standing. Unless the guarantee of the place in the medical class is elastic as far as time is concerned, the program could have the effect of denying to the best students the broad college opportunities otherwise available to them. It would seem necessary that students be told initially that at whatever time they choose they will be guaranteed acceptance into the medical school. Most will presumably go straight into Year III; others may elect to take a bachelor's degree; still others might choose to go on into graduate work before beginning medical studies.

By virtue of the opportunity to follow closely the progress of a select group of high school graduates through a specially designed, coordinated, and accelerated course of study, the Northwestern experiment may well provide information of great value and interest to medical educators and college faculties alike. The opportunity to compare the progress of these students with that of the large majority of the Northwestern class that enters after the usual premedical preparation should make this an extraordinarily informative study. It is to be hoped that procedures for careful evaluation of the achievement of the various objectives will soon be developed.

BOSTON UNIVERSITY
COMBINED LIBERAL ARTS—MEDICAL PROGRAM OF EDUCATION

The combined liberal arts-medical program of education at Boston University was started in the fall of 1961. It provides, for students entering directly from high school, a six-year course of study leading to the M.D. degree. Its purpose is to provide both an accelerated program and an improved education experience. The liberal arts phase will be conducted primarily on the university campus, and the medical portion at the medical school.

Background and objectives

In 1957 faculty members from the School of Medicine and the College of Liberal Arts began to direct their attention to the possibility of shortening the period between secondary school and graduation from medical

school. A grant from the Rockefeller Foundation enabled them to make a thorough study not only of the question of acceleration, but of the organization and content of the total medical educational experience (*1, 9*).

The Boston group quickly rejected the idea of merely telescoping the present number of teaching hours into a shorter time by eliminating vacations and requiring a heavier course load. They believed that a careful study of premedical education, and of secondary education, might result in an improvement of premedical and medical education as well as shortening of the time involved. The committees examined the American secondary school system, liberal arts education, various experiments in medical education, and the English educational system. Their critical examination of premedical education disclosed a great deal of repetition; much material that was normally presented in good secondary schools was being repeated in freshman college courses. They concluded that it would be possible—by careful selection of students, elimination of repetition, and provision of an integrated progression of courses—to increase the efficiency of the premedical educational experience. They hoped that such a program might also provide an improved intellectual climate and allow a faster pace of learning.

The faculty planning committees then developed specific objectives for a new educational program. It was hoped, first, to combine the liberal arts and medical programs into an integrated unit, with medicine becoming a part of general education. In addition, they wished to improve the scientific background of the students and at the same time strengthen their education in the humanities. The development of a scholarly mind and the improvement of the students' understanding of the duties of the doctor as a citizen and the relationship of medicine to society were also to be sought. Additional objectives relate rather closely to this last one: to increase the sense of responsibility of the doctor toward his patients, other doctors, and the various people with whom he works; to be concerned with the attitudes of the physician toward the continuing development of medicine, self-education after graduation, ability to get along with people of all social ranks, and care of his own health (*9*).

The liberal arts phase of the program, in the first two years, has the ambitious goal of providing an understanding of human nature and an awareness of the range of human values, developing an orderly scholarly mind, understanding social problems as they relate to the responsibilities of the physician, and appreciating principles of ethical conduct. The implementation of the new program was assisted by a grant from the Commonwealth Fund.

Admission to the program

It is intended that the entire class of 72 will be accepted directly from high school into the new program. In the first year, only 40 were admitted, the additional students to be accepted into the third year after completing

the usual premedical course. The students admitted must demonstrate outstanding ability in high school work and entrance examinations, although advanced placement is not now a specific requirement. The required high school subjects include four years of English and three years of mathematics, as well as physical sciences and foreign language. The selection of students who have a strong secondary school background in the sciences will enable the offering of advanced and intensive courses.

Accepted candidates will become provisional candidates for both the A.B. and M.D. degrees. Students will again be screened by the faculty at the end of two years to see whether they should continue toward the M.D. or drop out of the six-year program to seek a bachelor's degree in the College of Liberal Arts. (At any time a student may elect to transfer to a program directed toward a liberal arts degree.) It is anticipated that perhaps 20 per cent of the students will withdraw or be dropped at this point. Their places will be filled by students accepted into the third year after graduating from a liberal arts college. The usual course requirements for students entering with the bachelor's degree will prevail at this stage. Such applicants would take the Medical College Admission Test and would in other respects be evaluated in the traditional manner.

The program

Years I and II

In the first two years four courses in the sciences and humanities are offered during the regular school term and two courses during the summer. Specially designed basic courses in biology (including principles of genetics, embryology, bioenergetics, and physiology), inorganic and physical chemistry, and organic chemistry are offered in Years I and II. Mathematics is taught with physics and chemistry rather than as a separate course. Biostatistics, given during the summer, completes the required science subjects. Every student will have some courses in each of the following fields: English, history, government, psychology, sociology, and philosophy, in addition to a continuing program of tutorials in a foreign language. Proficiency in written and oral English will be required. Since it is assumed that the humanities and social sciences are as important in the education of a doctor as any other part of his medical education, these studies do not constitute a separate unit to be contrasted with the work in the natural sciences and medicine. Continuity, integration, and reduction of duplication are considered to be as desirable in these areas as in the natural and medical sciences. Insofar as possible, the work in the humanities and social sciences will be oriented toward the problems and opportunities of the doctor. Later in the curriculum, seminars and tutorial work will be emphasized.

During the summer between the second and third years students will take literature or fine arts and electives in the humanities, social sciences, or natural sciences.

During the first two years there will be 43 semester hours in the natural sciences and 27 in the humanities and social sciences. Six hours are available for electives (plus additional time if a student received advanced placement credit in one of the required subjects). By the beginning of the medical portion of the program, the students will have had approximately 96 semester units, or the equivalent of slightly more than three ordinary academic years of study.

Years III, IV, V, and VI

No radical changes have been made in either basic science or clinical subjects. Most of these courses have been going through a gradual change during the past several years, with the general trend being in the direction of a diminution of the number of lectures and an increase in the amount of small-group teaching. The first semester of Year III is devoted primarily to anatomy; in the second semester physiology and biochemistry occupy the entire time. Approximately one hour weekly is devoted to psychiatry. During the summer between the third and fourth years there will be seminars in the history of science and medicine and opportunity for additional electives.

In the fourth academic year, the following subjects are presented: pathology, microbiology, pharmacology, and an introduction to clinical medicine (previously taught as several separate courses: physical diagnosis and history taking, clinical laboratory methods, correlative basic science-clinical symposia, and psychiatry, including interview techniques). All subjects save microbiology are taught in both semesters. The summer session between the fourth and fifth years will offer seminar studies in health and society and opportunity for electives in the humanities or sciences.

The fifth year is devoted to clinical subjects, including medicine, surgery, psychiatry, obstetrics, pediatrics, neurology, preventive medicine, and rehabilitation. The time is divided departmentally for most of the work, although some interdepartmental symposia and clinical-pathological conferences are planned. Approximately two-thirds of the students' time is devoted to ward and clinical work and one-third to lectures, demonstrations, symposia, and other whole-class exercises.

The sixth, or clerkship, year is divided into 16-week trimesters. During any one period one-third of the class is free for elective courses, clinical work, or research. During this elective period a four-week vacation is optional. There are clerkships in medicine and surgery and a four-month interdepartmental human ecology program (pediatrics, psychiatry, obstetrics, and home care). In the human ecology program each student is assigned a pregnant woman who will deliver during his time on the service. He makes home visits and attends conferences discussing the problems not only of pregnancy, delivery, childbirth, and well-baby care, but also the emotional, social, and environmental problems he encounters. This interdepartmental program is coordinated by the department of preventive medicine. On the well-known Boston University Home Medical Service,

the students spend one month providing supervised medical care in the homes of patients who live in the vicinity of the hospital.

Tutorial program

Each student will meet weekly with a tutor. There will be one tutor for the two years in the liberal arts and another for the medical phase, in addition to a faculty advisor who will be available for informal contact and counseling over the entire six-year period. Each tutor will have from six to twelve students with whom he will meet once a week for one or two hours. The responsibilities of the tutors are great in this experimental program. The main purpose of the tutorial system is to provide guidance and stimulation for the students, recognizing that most of them will be younger and less mature than the average medical student. The tutors will be expected to promote the understanding and pursuit of a scholarly attitude on the part of the students. They will attempt to evaluate the students' ability to understand the importance of their work, and provide the stimulus to make the medical students eager to acquire learning on their own. In addition, the tutor in the medical years will be responsible for helping the student maintain a continuing interest in the preclinical sciences, an understanding of the importance of a liberal arts education, an indoctrination in the applications of the social sciences to medicine, and an understanding of medical ethics.

Discussion

Most of the careful and original thought that has been given to this program has been devoted to the two-year liberal arts portion. No basic change has been recommended for the medical years, save for the introduction of the tutors.

The specific phases of the program have been planned to implement the broad objectives outlined above. The prime requisite for attaining the objective of providing an integrated liberal arts-medical program, was to have representatives of these two divisions work together and exchange their views concerning their common goal. This has certainly been achieved in the planning, but to what extent the program itself will provide a truly integrated experience for the students can only be learned with time. The contemplated residence hall, the tutorial program, and the offering of courses in the humanities during the medical years are all designed with this goal in mind. The curriculum itself was considered of importance, but in addition much thought was given to the necessity for intimate, continuing, student-faculty relationships. The transition and adjustment from high school to this special program will be assisted by means of the tutorial programs and a proposed residence hall where students, faculty, and house staff can live together and mingle socially. At present the students are housed together in facilities on the university campus. Obviously the tutors will serve a function essential to the success of the program; the care with which they are selected and the skill, knowledge, sensitivity, and judgment with which they perform their tasks will have

a crucial impact on the outcome of the experiment. The tutors for the first year of the program include faculty members from a variety of departments and some selected graduate students.

The goal of strengthening the scientific education of the students requires at the outset the selection of students with an excellent secondary school background, as well as careful preparation, integration, and progression of courses in the sciences. There is a specific attempt to provide logical progression of coursework. For example, chemistry in the first year begins with a brief review of high school chemistry, followed by general inorganic chemistry and physical chemistry with some quantitative work; mathematics will be introduced as it applies during this phase of the program. In the second year, organic chemistry is presented; in the third year, biochemistry; in the fourth year, pharmacology. The sixth year's correlative review sessions will include advanced biochemistry. Comparable course progression can be seen in biology and behavioral sciences.

It seems reasonable to assume that with a known, standard, high-quality preparation, the instructors at any given level will be able to offer more sophisticated and rigorous courses at the advanced level. At the same time, the faculty in the earlier years could take advantage of the more or less uniformly high motivation and ability of the student group to offer more than the students might be able to obtain in most college-level courses elsewhere.

The ambitious goal of strengthening the educational background in the arts and humanities in a short span of time assumes that effective advantage will be taken of carefully selected students, selected courses, opportunities for elective study, and of course the tutorial experience. It is hoped that the balanced, coordinated program of liberal arts and science studies and a close faculty-student relationship, will aid in the development of the other qualities desired in students. Only a limited amount of elective time is provided during each year. The 16-week elective trimester of the sixth year (fourth medical year) will provide the only really significant block of time in which students can follow their own interests.

The new program involves primarily a shortening of the period from high school to the M.D. by means of specially designed courses, full use of summers for coursework, and a limitation of opportunities for elective courses at the undergraduate level. There is at present no attempt to take advantage of the special and uniform preparation of the students by any specific alteration in the medical school curriculum, although this may develop as the faculty gains experience with this new group of students.

Although the ultimate success of the new plan cannot be foreseen, it is apparent that a sound beginning is being made. Boston University has begun this experiment with the ultimate intention of accepting essentially the whole class directly from high school (assuming a small attrition rate). This fact in itself indicates that the administration and faculty are willing to take a bold step in an attempt to answer some of the questions which have been raised for many years concerning the length of formal medical education.

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C. Teaching Comprehensive Medicine

Four examples of the teaching of comprehensive medicine (Cornell, Colorado, Temple, and North Carolina) have been chosen for analysis because they indicate not only some of the variations in the definitions of comprehensive medicine, but also how different institutions have established programs in conformity with their own needs, goals, traditions, facilities, and opportunities—and how they have evaluated the results of their experiments. There is significant material here not only for the improvement of teaching but also for the advancement of knowledge in bettering patient care.

COMPREHENSIVE MEDICINE simply implies the mobilization of all appropriate available resources for the care of the patient. It implies a primary concern for the patient (rather than disease) and a consideration of all significant factors that affect his health. It implies the application of preventive measures to individuals and the employment of all practical means for the early detection of disease. Implicit in a primary interest

in the patient as a person is recognition of the importance of understanding factors that influence the relationship between doctor and patient and the communication that takes place between them. In short, we might define comprehensive medicine as an attempt to apply all available knowledge—be it of pathology, pharmacology, psychology, or sociology—to the maintenance of health and the diagnosis, treatment, and rehabilitation of the sick or disabled patient. Comprehensive medicine is of course "good medicine," but all good technical medical or surgical practice is not necessarily comprehensive.

The interest in this concept over the past 15 or 20 years has been, I believe, the result of two factors. First is the rapid expansion of medical knowledge and the resulting inevitable increase in specialization. In addition, an increasing amount of knowledge from other, relatively new fields has been shown to be applicable to the care of patients. The major objective of the comprehensive medicine concept is to minimize the gap between what is known and what is applied for the benefit of the patient. Medical care, even in a complex group practice, is no longer limited to doctoring, but includes the services of members of an increasing variety of allied professions and disciplines.

The charge that comprehensive medicine teaching programs are anti-intellectual or unscientific or that they are merely encouraging the application of compassion, humanitarianism, and common sense should be given brief note. In the first place, no rational person wishes to lessen the standard of patient care that has developed as a result of the marriage of science and medicine. It is merely intended that valid and applicable knowledge from other areas (such as psychology, sociology, and preventive medicine) be applied to the improvement of patient care. Humanitarianism needs no defense in medicine; but compassion and humanitarian feelings for the welfare and comfort of a patient are not synonomous with an understanding of the social and psychological factors involved in illness. Failure to understand and recognize these influences is unscientific in the first place, and it can be detrimental to the well-being of a patient in spite of the most sympathetic and humanitarian feelings on the part of the physician. Most of the experiments to be described in the following pages were conceived in an attempt to define and delineate some of the areas of new knowledge that may have practical application to patient care.

It will be noted that the definitions of comprehensive medical care will vary a good deal depending on the point of view of the institution professing to practice or teach it. At Temple, the orientation is primarily in the area that might be described as psychosomatic medicine; at North Carolina, the psychiatric emphasis is less prominent, but that of preventive medicine dominates the interdepartmental clinic; Cornell's research-oriented group is exploring the sociology of medical education to a greater extent than the others; the Colorado study utilized psychological techniques to evaluate an educational experiment that was located primarily in a general medical clinic of a city hospital.

No attempt is made in this chapter to review the literature in the fields related to comprehensive medical care, and it is not implied that the concepts are either new or revolutionary; in one way or another many medical school clinics have been approaching the problem of improving the teaching of ambulatory medicine for the past 30 years. The four examples that follow are given merely to indicate some approaches to the problems of defining and teaching comprehensive medicine, as one facet of the complex task of providing the foundation for the intelligent, scientific practice of medicine of the future.

CORNELL UNIVERSITY MEDICAL COLLEGE COMPREHENSIVE CARE AND TEACHING PROGRAM

The Comprehensive Care and Teaching Program at Cornell is primarily a 22-week clerkship in ambulatory medicine, pediatrics, public health, and psychiatry for fourth-year students. Studies have been carried on since the inception of the program in 1952 to evaluate its impact on medical students, faculty, and patients. The staff of the program are also actively engaged in research in problems of patient care.

Background and objectives

By 1951 there was a recognition on the part of many members of the faculty at Cornell, largely as a result of the long-time interest of Dr. David P. Barr[1] and Dr. Connie Guion, that there were inadequacies both in the care of ambulatory patients and in the teaching of comprehensive medicine *(2, 3, 4)*. The compartmentalized and fragmented care being given in the highly specialized clinics of most teaching hospitals tended to stress symptomatic and episodic care, and to create an emphasis on the study of disease rather than on the care of the patient. Under the leadership of Dr. George G. Reader, the Cornell faculty developed a statement of policy outlining their views on the aims and methods of clinical teaching *(19, 26)*.

In order to understand the objectives and the evolution of what was to become the Comprehensive Care and Teaching Program, it is necessary to review the definition of comprehensive medical care used by the Cornell group *(24)*:

> . . . comprehensive medical care is basically the preservation of health and the prevention as well as the cure of disease. In practice this implies attention to emotional and psychiatric, as well as physical factors, and continuing supervision of the patient in clinic, hospital or home for a sufficient period of time to bring him through convalescence and rehabilitation to an optimal state of

[1] Dr. Barr was a guest speaker at the 1960 AAMC Institute and is the author of Chapter 8, Section B, "Comprehensive Care Through Insurance Plans."

health and productivity, and to maintain him in it. . . . The unique features of comprehensive care are primarily related to a method and a point of view.

The faculty agreed that, before ambulatory patients could be properly used for teaching, alterations in the customary methods of outpatient care would be necessary. The patient should be made the focal point of medical care; coordination of activities in behalf of the patient would require some disruption of departmental lines and a new kind of group effort (*25*). A set of principles was established, among which were the concepts that on each hospital visit the ambulant patient should come to the same familiar place and see the same familiar faces; all patients should be considered candidates for total care, including attention to social and emotional needs; patients should be seen as part of a family with well members of the family receiving preventive care whenever possible; hospital services should be extended into the home when appropriate.

It was agreed that continuity of care was a cardinal principle of comprehensive care. It was therefore considered essential to lengthen the time during which a student could follow his patients. Discrimination in the application of therapeutic measures was stressed, as was the development on the part of the student of a sense of responsibility for his patients. It was thought that only through regular contact with the same patient over several weeks or months could a student learn how much can or should be done. This kind of patient care implied teamwork among the doctors, nurses, and social workers, as well as among the medical consultants. In view of the various disciplines involved and the necessity for adequate communication, a specific attempt was to be made to achieve mutual understanding through frequent meetings, conferences, and seminars.

The Comprehensive Care and Teaching Program was implemented in 1952 by a change in the curriculum of the fourth year which provided a longer student experience in the general medical clinic through pooling the time previously allotted to medicine, pediatrics, public health, and psychiatry. The program was organized with a full-time staff which, with consultants from various departments, had the responsibility for supervision of patient care and teaching in the general medical clinic.

An essential part of the original program was to subject it to critical scrutiny so that objective data could be developed concerning the achievement of the specific objectives and concerning comprehensive medical care in general, including its cost and the feasibility of its application to other settings. Sociologists under the direction of Professor Robert K. Merton, of the Bureau of Applied Social Research at Columbia University began in the spring of 1952 to develop a research program to evaluate the new experiment (*18, 19, 30*).

Student activities

The course in comprehensive medicine occupies half of the fourth year, or approximately 22 weeks. During this period each student spends two

half-days each week in the general medical clinic, and two half-days in elective clinics. Three half-days are devoted to conferences, grand rounds, and other activities not directly involving the care of patients. Another two half-days each week are devoted to seminars and free time (for home-care visits, research activities, and preparation of the senior thesis). During the 11 weeks on pediatrics, the students spend two half-days each week in the general pediatrics clinic; in a like manner they spend two half-days in the psychiatric clinic during that 11-week quarter. With the completion of the new outpatient wing at New York Hospital, a larger group of students can be accommodated in the general medical clinic. This would enable an extension of the medical clinic time from two half-days per week to three or four half-days per week.

The core of the program is the general medical clinic. All new ambulatory medical patients are first seen in this clinic, (with a few minor exceptions such as patients who require emergency care, etc.). Appointments are scheduled so that each student normally sees one new patient and one or two revisits on each clinic day. Approximately ten students (one-eighth of the fourth-year class) are in the clinic at any one session. The primary preceptors in the clinic are faculty members in the department of medicine; their 11-week assignments coincide with those of the students, providing the opportunity for a close relationship between instructor and student. Consultants in psychiatry, surgery, obstetrics and gynecology, and the medical subspecialties are available to the clinic on a regular basis. Some students are able to follow a pregnant woman through her prenatal period, attend the delivery, and provide postpartum and well-baby care (the latter through the well-baby clinic in pediatrics). The psychiatrist conducts seminars and consults on the advisability of psychiatric referrals, but does not ordinarily attempt to supervise psychotherapy in the general medical clinic; students have an opportunity for supervised psychotherapy in the psychiatric clinic.

Each student is assigned a patient on the home-care service or a family under the family care program; families in the latter group are selected on the basis of living within a reasonable distance of New York Hospital, having small children in the family, and having at least one member with a chronic illness. An attempt is made to avoid families with overwhelming social problems. The student will see the adult members of a family in the medical clinic, and the children in the pediatric clinic. It was initially hoped that each student would have at least one family to follow, in addition to one patient on the home-care service, but this has not been possible in most cases. Every student has either a family or a home-care patient during his 22-week service, but not necessarily both. The home-care program has been recently reviewed in some detail (*35*). Most of the students have an opportunity to follow a patient who has been discharged from the hospital to the home-care service. This is actually an arm of New York Hospital with high standards of care, carefully kept records, and close supervision by faculty and house staff.

A number of conferences are held, including psychiatry conferences,

comprehensive medicine conferences, home-care rounds, and seminars in which each group of ten students meets regularly with an instructor in medicine or pediatrics to review special topics or to discuss management of patients who present special problems. The comprehensive medicine conferences have gone through a continuous process of evolution in the first ten years of the program. Initially they emphasized the presentation and discussion of material from the social sciences relevant to patients being seen in the clinic. The social worker and public health nurse, both teachers as well as participants in the patient-care and research activities of the clinic, have taken an active part (*41*). There has been some shift in the emphasis over the years to a somewhat more traditional medical content.

Evaluation studies

The staff intended from the beginning to subject the Comprehensive Care and Teaching Program to critical scrutiny. This has primarly been done by the Bureau of Applied Social Research of Columbia University. These studies form one phase of their investigation of the sociology of the professions. Dr. Merton's primary goal has been to acquire basic knowledge about the professions in our society and the preparation and education for them. From this research it is hoped that some general sociological principles may be derived. The methods and some of the preliminary findings have already been reported *(18, 19)*. The major part of this work at Cornell has been in the area of the teaching and learning of comprehensive medicine: an appraisal of the educational process. Most of the studies (to be reported in detail by Merton, Kendall, and others) have related to the development of medical student attitudes toward patients, comprehensive medicine, and medicine in general; they have included identification of the students, their expectations, and their evaluations of the program; they have included descriptive material covering student experiences in the program and the influence of various factors on the range of their experiences. It has also been necessary to study the attitudes of the faculty toward the program and, to some extent, the impact of comprehensive medicine on the clinic patients.

From the studies designed to evaluate the experiment in teaching comprehensive medical care, a great deal has been learned about the development of attitudes and values by medical students. The evaluation studies have suggested that the experience in the Comprehensive Care and Teaching Program has a favorable effect on student attitudes toward the principles of comprehensive medicine *(18, 19, 28)*. It is of course too early to know whether these influences will carry over into practice. A good deal of this information has been helpful to the staff of the Comprehensive Care and Teaching Program in that they have been able to perceive weaknesses or inadequacies in the program more clearly and quickly than would otherwise have been possible.

Research in patient care

While the Bureau of Applied Social Research was studying the process of education for a profession, the staff of the Comprehensive Care and Teaching Program has been engaged in research largely relating to practical operational problems with the aim of understanding and improving patient care. The research was begun primarily to assess the extent to which the program was providing truly comprehensive medical care for patients, but has expanded into many areas relating to the care of patients in general. Dr. Reader has emphasized the research-oriented philosophy of the clinic, pointing out that patient-care research implies the study of the relationship of people to their environment, of their interactions with each other, and of attempts at modifications of these relationships (*27*). A good deal of information is already available from psychology and sociology concerning the way people function as individuals and as members of groups; systematic observations of patients' responses to the care they receive can result in the development of hypotheses and the formulation of general principles that could be of practical value in the practice of medicine. The emphasis in the Comprehensive Care and Teaching Program is on an objective appraisal of all methods and techniques, rather than on a vocational or practical approach. It is hoped that through such objective analysis some aspects of the art of medicine can be made scientific.

Many observations have already been made which have led to improvements in the care of patients in the clinic. Perhaps one of the reasons for the lack of major frustrations in the Comprehensive Care and Teaching Program has been the policy of approaching difficult situations as challenging problems for study rather than as obstacles. It should be borne in mind that the studies have been carried out not only by physicians on the clinic staff, but by sociologists, social workers, public health nurses, statisticians, graduate students, residents, and fellows. While there is not space for a review of the research in patient care, a list of a few of the topics that have been explored will give some idea of the scope of these activities. Among the investigations, published and unpublished, are studies on the cost of providing comprehensive medical care (*21, 31*), and on various problems in the management of patients with chronic illness, including studies of nursing needs of chronically ill patients (*7*), of nursing referrals (*33*), and of the level of medical information among patients (*23, 34*).

Discussion

The significance of the Cornell Comprehensive Care and Teaching Program lies primarily in four of its interrelated contributions. In the first place, the program provided an opportunity for medical students to participate in the provision of continuing, comprehensive care of patients and at the same time a mechanism for interdepartmental cooperation in teaching and patient care in a specialty-oriented medical center (*19, 25, 28*). Some improvement in the functioning of the clinic and in the quality

of the teaching of ambulatory medicine would probably have resulted merely from the provision of a full-time staff with a primary commitment to the outpatient clinic. The clearly defined goals with respect to both education and patient care enabled the staff to effect profound alterations in the medical clinic organization. The establishment of a high-quality home-care service, improved consultation mechanisms, and the opportunities for continuity of patient care have had a definite impact not only on the medical students but on patterns of patient care and residency training in the medical center as well.

The program was planned from the beginning to be subjected to objective scrutiny by outside observers. It was hoped to determine whether or not the clinic experience was encouraging the development of the desired attitudes toward this type of patient care. It is unlikely that even the local impact would have been as great as it was had the research-oriented groups not been scrutinizing the new program. The original provision for objective, outside evaluation to determine whether or not the desired ends were being realized was a key step. Not only did this attitude stimulate a scholarly approach toward the problems encountered, but the mechanism for evaluation brought a new group of investigators into the clinic environment.

A significant contribution resulting from this desire for evaluation was the introduction of academic sociologists into the medical setting—not as technical assistants but as investigators and colleagues, bringing to the study of the processes of medical education and medical care their knowledge, methods, and points of view *(8, 19)*. Sociologists and other social scientists have made contributions to an understanding of some aspects of medicine *(17)*, such as the roles of the patient and the doctor *(22)* and the attitudes of special groups toward medical care, illness, and health *(32)*. As Reader and Goss *(29)* expressed it, social scientists have so far collected "islands of facts" concerning phenomena related to medicine. The findings in the studies of medical education are intended on the one hand to provide information that will enable medical educators to evaluate and modify their programs. At the same time, the data collection has been so designed that it can add to our understanding of the development of the professional role, that is, to provide information of theoretical interest to the sociologist. The sociologists are thus contributing to the development of a scientific discipline dealing with a patient's relationships to other human beings, including the physician. Their use of the scientific method in studies based on sociologic theory is their major contribution. As sociology increases its understanding of these processes, of such central importance to medicine and medical education, information of practical value to the medical educator and the physician will inevitably develop.

Finally, the use of a clinic such as this as a laboratory for research into problems of patient care has opened new opportunities for study while at the same time providing information of practical value to those who wish to improve the quality of the care they are rendering. The

fostering of the development of research in patient care as an academic discipline may ultimately prove to be the major contribution of the Cornell Comprehensive Care and Teaching Program. The creation of a scholarly orientation toward the study of problems involved in defining and providing continuing, comprehensive patient care has been notable. Directors of outpatient clinics, practicing physicians, and faculty members who participate in clinical instruction of medical students may before long have a new body of useful knowledge at their disposal.

During the first half of this century the research orientation on the wards of teaching hospitals and the introduction of scientists from related disciplines were major factors contributing to the development of scientific medicine. The new emphasis on research in patient care, again utilizing techniques and knowledge from disciplines new and unfamiliar to most physicians, may ultimately effect a significant transformation in the practice and teaching of clinical medicine. The implications of such new knowledge for the practice of medicine are not yet known. It is obvious, however, that the provision of medical care of the highest quality in the future must be based on scientific knowledge derived from planned experimentation and critical inquiry rather than solely on empiricism, authority, and tradition.

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE GENERAL MEDICAL CLINIC

From 1952 to 1956 an experiment in medical education, involving a study of the teaching of comprehensive medical care, was carried out in the general medical clinic at the University of Colorado. Two distinct but closely interrelated activities were involved: the establishment and operation of a general medical clinic for the teaching of comprehensive medicine to fourth-year students, and the design, execution, and analysis of a program of educational research to evaluate the performance of the experimental clinic.[2]

Background and objectives

Although there were many reasons behind the initial decision to establish a clinic for comprehensive medical care at the Denver General Hospital in 1952, the essential point was that it was hoped in such a clinic to be able to teach the principles of comprehensive medicine. During the planning period a wide variety of objectives were considered; as the clinic actually came into operation, these became focused specifically on the problem of teaching comprehensive medicine to fourth-year students. In considering the nature of the general medical clinic and of the educational experiment centered in it, it is important to recognize the specific

[2] Hammond and Kern's detailed and comprehensive book, item 10 in the bibliography, should be consulted by anyone interested in teaching ambulatory medicine or studying medical education.

objectives of the Colorado group. To quote Kern (*15*): "Our definition of comprehensive medicine is such that the term can be used synonymously with sound medical practice, or perhaps 'ideal medical practice.' Comprehensive medicine simply implies that the physician, or one or more of his team of associates under his direction, must provide or assist in providing whatever is necessary and feasible for the patient's total health."

It was believed that the same faculty members responsible for ward teaching and clinical research programs in the medical school should be used as teachers in this clinic.

The specific aims of the clinic were that the student should acquire at least as much fundamental medical knowledge as in the traditionally organized clinics, while acquiring additional knowledge and skills in the psychological and sociological areas essential to comprehensive medicine; in addition, he should develop and maintain appropriate attitudes concerning comprehensive medicine. Students were to be given responsibility for the care of patients and were to be afforded the opportunity for continuity of contact with their patients; it was hoped that this would contribute to the development of an appropriate physician-patient relationship, to the acquisition of useful knowledge of the patient as an individual, and to an understanding of the course of his disease. The responsibility of the student-physician to his patients was to apply not only in the clinic, but whenever possible in the hospital and the home as well. The importance of interpersonal relationships within the patient's family was to receive emphasis through a family care program. Preventive medicine was to be considered an integral part of sound medical practice. The social and cultural aspects of comprehensive medical care were not to be considered as separate entities but as component parts of the philosophy and practice of comprehensive medicine.

While the clinic was being planned, the program for measuring its success was also being developed. The main goals of the research program were to evaluate the general medical clinic in terms of its aims and to provide information concerning medical students and their activities which would be of general relevance to medical education (*16*). In terms of the clinic's goals, the problem was to determine whether or not the general medical clinic did in fact enable the students to acquire as much medical knowledge as those in the control group, and to determine whether the experimental group acquired additional knowledge, skills, and attitudes not acquired by the group in the traditional program. The problems relating to medical education in general involved an exploration of student personality attributes that might relate to successful performance in the general medical clinic or the control clinics and an attempt to identify reasons for any successes or failures in the attainment of the goals of the clinic.

General medical clinic

The fourth year at the University of Colorado consisted of four quarters of 11 to 12 weeks each. One quarter was devoted to surgery and surgical

specialties; one quarter was free, during which time students could take electives. The remaining two quarters provided the period during which the general medical clinic experience was scheduled. During the period of the experimental program with which we are primarily concerned (1953-1956), the class was divided into two parts, with one half assigned to the general medical clinic and the other (control) group taking separate clinics and clerkships at Colorado General Hospital. The students were chosen at random for the experimental and control groups, the only selection being the provision that the same number of students were chosen for each group from the upper, middle, and lower academic strata of the class.

The planners made a specific attempt to achieve distinct differences in the experiences of the experimental (general medical clinic) group of students as compared with the controls. The experimental group encountered a greater emphasis on development by the student of a sense of responsibility for the patient, and of a doctor-patient relationship, through continuity of student-patient contact and a thorough understanding of a few patients (rather than superficial contacts with a large number of patients). There was increased emphasis on developing a concern for all of a patient's problems, and opportunity was provided to deal with family groups and (to a limited extent) with patients in their home environment.

The general medical clinic was basically a medical and pediatric clinic; about one-third of the patients were children. Because of the desire on the part of the staff to have the clinic meet educational rather than service needs, the number of patients was limited. Students would ordinarily see one new patient and one revisit at each session; this allowed ample time for a thorough investigation of patients' problems and adequate opportunity for consultation with the faculty. The students in the general medical clinic had an opportunity for continuity of patient care over a 24-week period. They were in attendence in the clinic about half of each day of the week during the six weeks on pediatrics and during the 12-week medical ward and specialty clinic assignments. During the six-week obstetrics and gynecology clerkship the students spent two half-days weekly in the clinic in order to follow their patients. No such opportunity for continuity was provided the control group of students, who spent approximately eight weeks in medical and specialty clinics at Colorado General Hospital, four weeks on the medical wards, and six weeks each on pediatrics and obstetrics and gynecology.

The activities of the general medical clinic students were supervised by a faculty team which emphasized the comprehensive approach. The staff consisted of carefully selected faculty members from the departments of medicine and pediatrics. Representatives of the departments of obstetrics and gynecology, preventive medicine, and psychiatry, as well as surgery and other specialties, served as consultants. In addition to the medical personnel, the clinic staff included social workers and a public health nurse. Whenever possible, consultations were obtained by having consultants come to the clinic, rather than by sending the patient to other clinics.

The usual arrangement was to have obstetricians, surgeons, and other specialists in attendance on special days in the clinic, at which time consultations could be arranged. A core of internists and pediatricians was available in the clinic at all times as, on occasion, were psychiatrists. As a rule, an attempt was made to have one internist available for each two students who were seeing adult patients at any clinic session.

The obstetrical and well-baby programs provided the student with long-term experience in prenatal and well-baby care. Each student saw one or two pregnant women whom he followed through the prenatal period and delivery. He was responsible for postpartum care, and for the care of the new infant following delivery as long as he was on the service.

A number of conferences which were held for the general medical clinic students related specifically to the goals of the clinic. Comprehensive care conferences were held to discuss social and psychological as well as medical aspects of the patients' illnesses. (Because most of the social and emotional problems of the patients were extremely complex, it soon became necessary to separate the social-psychological conferences from the clinical medicine conferences.) There were additional teaching sessions, including psychosomatic conferences and seminars on the management of ambulatory patients and the more common medical and pediatric problems. Groups of four or five students were assigned to two preceptors (an internist and a pediatrician) in order to provide additional guidance and an opportunity for discussion of the philosophy of comprehensive care. It was hoped that students would in this way become well-acquainted with at least two members of the staff with whom they could discuss problems relating to the clinic or their patients.

One of the major differences between the experimental and control programs was the family care activity in the general medical clinic. Whenever a new patient was assigned to a student, that student became responsible for the care of other members of the patient's family. The children in such families would receive well-baby care and routine immunizations. The patients were notified that they would have the same physician at each clinic visit and that their student-physician would take care of other members of the family if they needed attention; they were given the student's phone number and were encouraged to call him when they needed medical attention or advice. Faculty and medical residents provided the necessary consultative support. In addition, each student was specifically assigned to a famliy for intensive medical care; these families were selected by virtue of the presence of chronic organic illness, small children in the household, reliability, and motivation for such care on the part of the family. Throughout the entire six-month period the general medical clinic student served as this family's physician.

There were no attempts to develop this sort of relationship in the medical clerkships and specialty clinics to which the control group of students were assigned; in fact, because of the short time the students spent in each clinic, it was usually necessary to emphaize that the instructor rather than the student was the patient's physician. It was hoped that the

two groups would have significantly different experiences and that it would thus be possible to evaluate the impact of the general medical clinic on the students, using the other group as controls.

Evaluation tools

The research program involved a study of the fourth-year students during school years 1953-54, 1954-55, and 1955-56. The unique internal control described above applied to all three classes. In order to evaluate the results of the experiment it was necessary to make the objectives of the general medical clinic specific and testable; once this was done, the methods for testing had to be developed, tests administered, and results analyzed. In order to understand the significance of any observed changes, it was necessary to determine how the experimental experience actually differed from that of the controls, and if possible which differences were the significant ones. Finally, the research program included a study of the individual differences among the students, the relationships of these differences to changes in test performance, and their relationship to student performance in the general medical clinic. Special techniques and procedures had to be developed to measure the variables. For example, a sound film was developed which showed a six-minute interview between a doctor and a patient; at the conclusion of its presentation to students, they were given a test that required the application of medical, psychological, and sociological knowledge and skill. Recordings of student-staff conferences were studied as a means of determining how the teaching differed in the control and general medical clinic groups. A number of tests were designed to measure individual student attributes so the effects of the experimental variables could be better understood. The relationships bewteen the students' attributes and their performance on the various tests were studied.

Discussion

Several operational features of the general medical clinic warrant brief comment. For one thing, it was one of the few attempts to establish a clinic for comprehensive medical care in a nonuniversity hospital. The difficulties resulting from administrative problems of the hospital, the concern of the faculty with possible dilution of their efforts in a secondary teaching hospital, and the nature of the patient population were formidable. Because the general medical clinic was located in a city general hospital and the control clinic in the university hospital, it is not surprising that the characteristics of the patients in the two groups differed somewhat. The students in the general medical clinic were more likely to encounter patients who were old, from broken families, members of ethnic minority groups, and of low socioeconomic status. The patients often presented overwhelming social problems, showed little motivation to get well, and had a high rate of broken clinic appointments. They also presented a limited variety of disease entities. The nature of the patient

population may well have influenced the development of student attitudes, particularly since many of the faculty considered general medical clinic patients "less suitable teaching material" than those at Colorado General. Because the control students usually did not follow their patients for as long a period of time as did those in the general medical clinic, the social and economic factors were of less importance to them.

Initially it was planned that home visits would be an important part of a family and home-care program. For a number of operational reasons, the home-care aspect was essentially eliminated and replaced by the intensive family care program. Although not all the families fully met the criteria outlined in the preceding section, most of the students did have a satisfactory relationship with them. One reason for this may have been the fact that a higher percentage of these patients had specific organic diseases than did the total clinic population. Several of the objectives of the general medical clinic were sought in the family care program. The establishment of a good relationship between the student and the patient was perhaps the most significant of these. In addition, the program enabled the student to achieve a better understanding of the relation between a patient's social and psychological environment and his medical problems. As might be expected, students considered their families reasonably satisfactory when it was possible to achieve some degree of success in improving either their physical health, their emotional status, or their social situation.

It is not surprising in retrospect that the preceptorial meetings described in the preceding section soon became the key to the success of the family care program, even though this was not initially their main objective. It is likewise not surprising that the comprehensive care conferences were unpopular with the students, although as will be seen below they believed that they received some benefit from them. As the program developed, it was changed somewhat by the elimination of many of the conferences, and by the elimination of some of the time spent in the medical specialty clinics and on the medical and pediatric wards.

After the research period ended in 1956, most fourth-year students were given experience in the general medical clinic. The six-month continuity with patients was retained, but the students now had only two or three half-days weekly in the clinic. The remainder of the time during this period was essentially a combination of the experimental and control curricula: medical specialty clinics, pediatric clinics, and ward work, and the clerkship in obstetrics and gynecology.

Outcomes

The attempt to make a controlled study of a medical educational experiment was the most significant feature of the program. The studies revealed that although the general medical clinic students during the experimental period acquired at least as much traditional medical knowledge and skill as did the control group, there was only a slight increase in their acquisition of psychological and sociological knowledge and skill as

compared with the control students. The individual attributes of the students were much more closely related to the development of knowledge and skill in these areas than was the educational program in which the students participated.

The most definite effect of the general medical clinic program was on student attitudes: the clinic students came to believe in the importance of some of the aspects of comprehensive medical care and of psychological factors in patient care. During the fourth year the control students developed increasingly negative attitudes toward all aspects of comprehensive medical care, while in the clinic group there was rather little change in attitudes. It is of interest that the favorable attitude changes took place more with respect to concepts than to aspects directly related to patients. In general, the students who were most responsible and intelligent benefited the most in terms of acquisition of knowledge and skills and development of attitudes relating to comprehensive medicine; students who stood low in their class tended to develop strongly negative attitudes toward comprehensive medicine. As has been found elsewhere, expectations regarding the internship exerted a profound influence on student attitudes, especially in the last half of the fourth year.

In general, student performance in the general medical clinic correlated closely with performance in other areas. This suggested of course that the faculty in this clinic were basing their evaluations on the same criteria as were those in the control clerkship, an interesting finding in view of the rather specific aims of the clinic program.

From the standpoint of the first basic objective of the general medical clinic, it is apparent that it was "successful" in terms of providing no less opportunity for the acquisition of medical knowledge and skill than the control experience. The favorable influence on student attitudes toward many of the concepts involved in comprehensive care is probably of greater significance than one might initially suspect in view of the fact that the clinic patients usually presented multiple and insoluble social, economic, and psychological problems.

The failure of the general medical clinic students to gain additional sociological and psychological knowledge and skill as compared with the control group may have been due to lack of a clear intention in this regard on the part of the faculty. Dr. Kern, the director of the general medical clinic, expressed this point of view when he stated (*10*): "There is no concrete body of knowledge that can be labelled 'comprehensive medicine.' . . . It was never intended that the GMC should train the student in scientific psychology or sociology."[3] As further experience was acquired by the faculty of the clinic, they came to believe that comprehensive medicine involved primarily an attitude toward patient care rather than a discipline. In view of this position on the part of the key faculty mem-

[3] From pages 157-8 of the Hammond and Kern book. On page 5, however, Kern did report that one of the goals of the program was to provide the students with the knowledge and skills in the areas of psychology and sociology "essential to the practice of comprehensive medical care."

bers, it is apparent in retrospect that no real differences in acquisition of knowledge or skills in sociology and psychology should have been expected. (This position is in contrast to that of the group at Temple, who make a specific attempt to have their students acquire psychological and some sociological knowledge and skill which can be applied directly to the care of patients; of course, this is not done solely in the clinical setting, but in didactic courses, seminars, and other activities which precede the students' clinical experience.)

The Colorado experiment taught many fruitful lessons. For one thing, the faculty as a whole has accepted the concept of the general medical clinic as an appropriate environment for fourth-year outpatient teaching. Although the contract with the Denver General Hospital terminated in 1961, the influence of the clinic will continue to be felt; the plans for the future university hospital call for the establishment of a similar clinic; continuity of patient care, an appropriate student-patient relationship, and concern for the devolpment of interdepartmental cooperation in patient care and teaching have all been more fully accepted as a result of the clinic experience.

Of greater significance for medical education generally is the meticulous care that was given to the planning, execution, evaluation, and candid reporting of the research program based on the work of the clinic. The lessons learned, the solutions found, and the problems uncovered at Colorado should be of great value to any medical school contemplating an evaluation of its educational program. While it is to be hoped and expected that future controlled studies in medical education will be even more fruitful and more skillfully done, such will be possible only because of the intelligent and imaginative exploration made by Hammond and his group at Colorado.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE
COMPREHENSIVE MEDICINE

The Comprehensive Medicine Program at Temple involves primarily an intensive outpatient clinic experience for fourth-year medical students. It is based on the premise that the medical care of patients can be improved by the utilization of psychodynamic and sociologic knowledge not ordinarily applied in most medical clinics.

Background and objectives

The program began in 1953 as a weekly conference for fourth-year students in the medical clinic under the direction of Drs. William A. Steiger and A. Victor Hansen, Jr., of medicine and psychiatry respectively.[4] As a result of this collaboration, detailed objectives for a program of

[4] Dr. Francis H. Hoffman replaced Dr. Hansen as codirector for psychiatry in 1956.

teaching comprehensive medicine were developed. During the next few years the program evolved into an intensive clinic experience. It is now preceded by lectures and seminars in the first three years which have been designed to prepare the students for their responsibilities (*37, 38*).

The specific goals included, first, an orientation toward the patient rather than his disease; there was to be no "hierarchy of disease interests" (*39, 40*). Patients were to be studied from the standpoint of the cause of their disability, and realistic short-term goals established; the use of supportive measures tending to perpetuate dependency and disability would be discouraged. The emphasis was to be on the development of practical methods of therapy; psychiatrists were to participate actively in the care of essentially all patients, rather than serving passively as consultants. Students would be encouraged to analyze their own feelings with respect to patients and to use this understanding to help them to understand and manage their patients (*5*). Thus, since the goal ultimately was to develop practical methods of therapy, the effectiveness of the program would be tested by its impact on patient care. Evaluation of student performance and development of attitudes were also to be carried out.

The Temple program is almost unique among educational experiments in that practically no curricular modification was necessary in order to implement it. The change was made merely by introducing into the existing medical outpatient clinic setting a staff of internists and psychiatrists committed to the philosophy and practice of comprehensive medicine as defined by the Temple group. Coincident with the completion of a new outpatient clinic building in 1956, the entire general medical clinic came under the direction of the comprehensive medicine staff. As will be described below, minor modifications were made in the curriculum of the second and third years to accommodate certain specific introductory courses.

Comprehensive medicine clinic

The comprehensive medicine clinic is the general medical clinic of the Temple University hospitals. Fourth-year students spend six weeks (in groups of 12) in this clinic, which is staffed by a team of internists and psychiatrists. All adult nonsurgical patients come initially to this clinic for care. Medical specialty clinics also exist, but patients attend these only by referral from the comprehensive medicine clinic. Students spend four days a week in the comprehensive medicine clinic, and one day weekly in specialty clinics. Students see all the new patients, and as time permits they see all patients making revisits to the clinic regardless of whether or not they have seen the patients before. This means that medical students are following all of the patients in the comprehensive medicine clinic; there is no service clinic separate from the teaching clinic. Ordinarily the students will see one new patient and a varying number of old patients each day.

The student serves as the patient's physician. Each work-up is reviewed by one of the internists or psychiatrists, depending on the student's assessment of the primary problem. In most instances patients are seen by both an internist and a psychiatrist at the initial visit. The faculty preceptors, often with the assistance of one of the social workers, help the student to develop a clear idea of the patient's major problem and the cause of the patient's disability, which of course may be quite different from the medical diagnosis (*36*). The student completes a sheet for the chart of each new patient, outlining his plan of management. This medical management plan includes a statement of the patient's primary problem, secondary problems, etiology of symptoms, disability and its etiology, and a brief statement of the goals and the recommended management. The careful use of this formulation of disability, goals, and management provides the student-physician with much more pertinent information than usually is immediately available in the ordinary clinic chart. The emphasis is on diagnosis, evaluation of disability, and application of practical methods of therapy. The psychiatrists do not spend a great deal of time exploring childhood origins of current conflicts; rather, they attempt to elicit and demonstrate the manifestations of emotional problems as they occur and help students work out short-term, practical means of dealing with them.

Two or three afternoons a week comprehensive care conferences are held at which the problems of diagnosis or management are discussed by the clinic staff and the students. Internists, psychiatrists, and social workers participate actively in the discussions. Depending on the nature of the problem under discussion the emphasis may be primarily biological, psychological, or sociological. The students are required to write a rather detailed report of the management of one patient. This includes home visits and a careful consideration of all factors involved in this patient's problem. Home visits are made only when indicated for the specific purpose of obtaining information about the patient's environment, family, and the like. Clinic patients' records are reviewed routinely by the staff after each ten visits so that the staff may be sure that the objectives of the program with respect to patient care are being achieved.

General practice clinic — family clinic (third year)

It was observed early in the comprehensive medicine clinic program that students experienced great difficulty in coming to grips with new patients' problems and, in the case of old patients, spent an inordinate amount of time reviewing the previous charts. They had difficulty appreciating their feelings toward patients and understanding how awareness of their own feelings could be valuable in dealing with patients. In addition, the staff recognized that no continuity of student-patient relationship could be developed in the short outpatient clinic experience (initially four weeks, subsequently expanded to six).

For these reasons a program was instituted for third-year students

which involved the following of a patient with chronic illness or disability for the entire school year. Students would see these patients at fortnightly intervals and discuss at conferences the problems of management of patients with chronic (frequently incurable) diseases. This experience gave the students a year-long relationship with a patient and enabled them to explore their own reactions toward these patients. This general practice clinic proved to be useful in preparing the students for their fourth-year experience.

The program was modified in 1959, shifting from the care of a single patient with a chronic disease to the supervision of the health care of a family in the immediate vicinity of the Temple University Hospital. The students may, if they wish, continue to follow their families during their fourth year as well, although this is rather difficult due to the intensive fourth-year clerkship-internship schedule. Although the family program is still relatively new and cannot yet be evaluated, it has provided an opportunity for the department of pediatrics to participate actively in the comprehensive medicine program. The main objectives of the family clinic program are not basically different from those of its predecessor; the students are encouraged to learn about dealing with patients rather than to acquire specific information concerning disease.

Doctor-patient relationship course and correlation clinics

The initial year of the general practice clinic demonstrated the need for additional preparation of the students for this type of experience. This led to the development of a course given in the second year under the direction of the department of psychiatry entitled "the doctor-patient relationship." The purpose of this course is to provide the student with some understanding of himself and the way in which this understanding can be used to understand and deal with patients. It is hoped that in this course students can anticipate and appreciate some of the interpersonal problems that will confront them in their relationships with patients in the clinical years.

The comprehensive medicine group participates actively in first- and second-year correlation clinics. In these sessions the comprehensive approach, as defined above, is shown to be applicable to the understanding of the problems of patients with a variety of medical, surgical, or other purely "organic" difficulties.

Discussion

With the exception of the addition of the Saturday morning general practice or family clinic conferences and the second-year doctor-patient relationship course, no curricular modifications have been made to implement the comprehensive medicine program.

The evaluation studies have indicated that students do develop positive

attitudes toward the comprehensive approach as a result of their experiences in the clinic (*20*). More important, perhaps, in view of the initial goals, is the demonstration that patients cared for with this approach actually do better from the standpoint of their physical or psychological disabilities than they did under the previous standard medical clinic regimen *(9)*. One of the early studies, done by A. V. Hansen, Jr., and Edward Weiss, was the careful analysis of records of all patients whose charts weighed more than one pound (*37*). Not surprisingly, the great majority of these patients had functional complaints and were being shuttled from one specialty clinic to another where symptomatic or supportive therapy was administered for the most prominent current symptom. It was evident that this type of symptomatic management of patients with emotional problems was uneconomical, inhumane, and ineffective. By spending more time with these patients during visits to the comprehensive medicine clinic, it was possible in most cases to define the basic nature of their problem, and in a great many cases to effect significant improvement in personal well-being and social effectiveness. It was demonstrated that the comprehensive approach and the spending of adequate time with each patient was in the long run an economical procedure, since a majority of these patients responded well and subsequently required much less medical attention than they had previously.

In an intensive study of a sample of the patients who had been seen in the comprehensive medicine clinic, the somewhat surprising discovery was made that although the student-physician frequently was impressed with his apparent lack of progress with his patients by the end of his six-week service, the patients themselves usually recognized definite improvement within this period. Many of the patients, particularly those with psychological problems, could point to a specific clinic visit at which it became apparent that the doctor had a real understanding of their problem and transmitted this understanding to the patient.

The usual difficulties associated with charity teaching clinics in metropolitan areas are encountered. The mobility of the patient population, the lack of continuity in the doctor-patient relationship, and the presence of many insoluble social and economic problems create hardships and handicaps for the student-physicians. The social pathology is often of such severity that it tends to overshadow all other components of the problem. In spite of this kind of difficulty, the student morale is high (perhaps because of the relatively short clinic experience) and the results of the patient management are good. The objective of developing practical methods of therapy for the general physician appears to be approaching realization. This clinic is not an interdisciplinary one in the sense of providing a type of group practice. Surgical and other consultants do not as a rule visit the clinic. There is no strong emphasis on preventive medicine, such as there is at North Carolina. The emphasis is on the student-physician's acquiring a more comprehensive approach to patient care under the guidance of dynamically oriented internists and psychiatrists. The integration of the psychiatrists into the general medical clinic

is very fully achieved here; psychiatrists participate directly in the management of the majority of patients seen in the clinic. The principles of dynamic psychiatry are applied in the comprehensive medicine program, but there is no attempt to emphasize psychiatric theory in the discussions of management. This is done at the practical level, with strong emphasis on the fact that the patient must solve his problems for himself rather than use his social difficulties or emotional background as an excuse for disability.

The comprehensive medicine group now also serves as a team on the medical ward service. During their period on service they have the opportunity to demonstrate their approach to the house staff, who do not have the outpatient experience. The impact on the inpatient service has not been evaluated in any controlled sense, but two examples might illustrate the way in which the group has contributed to improvements in patient care. In one case, it was apparent that the house staff were having difficulty communicating with many of the ward patients and were unable to convince them of the necessity to follow instructions. By simple tests the consultants from the comprehensive medicine staff demonstrated that the median I.Q. of the ward patients was quite low. This finding led to the development of simplified techniques for communication with patients and the acquisition of greater understanding on the part of the house staff of some of the obstacles to adequate doctor-patient communication; this problem was explored by the Colorado group also *(9)*. Another instance is recorded of a difficult, recalcitrant, but seriously ill patient who refused to cooperate with his physicians; the house staff had lost patience with him. One of the psychiatrists in the comprehensive medicine group discovered that his hostile behavior was due to fear; once his anxieties were understood, he could be dealt with effectively.

The emphasis on the exploration of the psychological and sociological as well as biological aspects of patients' problems is in part a result of the strong influence at Temple of Dr. O. Spurgeon English and the late Dr. Edward Weiss *(5)*. The setting at Temple was not conducive to a broad interdepartmental effort, but was well suited to the close medical-psychiatric collaboration which has developed. In this school the department of preventive medicine is not a dominant clinical entity (as it is at North Carolina or Boston University, for example); hence there is much less emphasis on preventive medicine in the fourth-year clinic than on psychosocial factors. The third year family program was designed in part to provide experience with this phase of comprehensive medical care. The students receive a strong orientation toward an understanding of the components of the relationship between physician and patient. They demonstrate, in their performance in the clinic at least, that they develop an interest in their patients despite the fact that many do not have "interesting" diseases.

The primary objective of the Temple University School of Medicine is the education of broadly oriented practitioners of medicine. Many of

the faculty and administration believe this should be interpreted to mean the education of physicians for the general, or family, practice of medicine. Since the family physician should be well prepared for the effective care of patients as people, this program of comprehensive medicine at Temple appears to be eminently consistent with the objectives of the school.

THE UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE GENERAL CLINIC

The general clinic at the University of North Carolina, an interdepartmental ambulatory patient service, is the core of the outpatient clinic activities at North Carolina Memorial Hospital. The departments of medicine, preventive medicine, psychiatry, and surgery are the primary participants. Medical students spend half of their fourth year in the general clinic and pediatrics clinic, which offer facilities and staff for the provision of comprehensive medical care, a home medical service, and an active program of research in the problems of patient care.

Background and objectives

The primary goal of the school, which expanded from a two-year program in 1952, is to educate practicing physicians for the state of North Carolina. During the planning that preceded the opening of the hospital and the institution of clinical teaching, the newly appointed clinical department heads soon agreed on the desirability of providing a more comprehensive approach to patient care and clinical teaching than had been customary in most medical schools. New patterns of medical care and the changing role of the family physician focused their attention upon the problem of ambulant patient care and the challenges presented in early diagnosis, prevention of disease, and care of patients with chronic illnesses (*43*). The faculty developed a number of rather specific objectives for the teaching program which were to shape not only the curriculum but the pattern of ambulatory patient care as well.

These goals stressed that the student should have the responsibility as the patient's physician, acquire an understanding of the patient as a person, and learn to recognize problems associated with the patient's interrelationship with his environment. There should be a maximum amount of continuity of contact between student and patient. In addition, the student should learn about his relationship and responsibilities to referring physicians and to consultants. The over-all aim would be the provision of excellent traditional medical care, with appropriate attention being given to the social, psychological, and preventive points of view. Maximum service should be given to the patient in a single clinic visit; compartmentalization in the outpatient department should be minimized. There should be no separation of the teaching clinics from service clinics; all patients would be teaching patients. The faculty hoped to provide an

environment in which the student could integrate his experiences and knowledge as he matured personally and professionally. It was hoped that the students would be educated in the provision of optimal health services in a highly scientific manner, but without losing intimacy of patient care and an interest in the patient as a person.

The faculty had the advantage of being able to develop the clinical curriculum *de novo,* and to create the outpatient clinic without being committed to any local traditions or having to alter existing methods of operation. It was decided from the beginning of clinical teaching at North Carolina that the outpatient department should be a general clinic (not to be confused with general practice clinic) which should take the place of the usual medical, surgical, and specialty clinics. It was established as an interdepartmental teaching activity of the departments of medicine and preventive medicine, with participation by the departments of surgery and psychiatry and close association with the pediatrics clinic. Responsibility for direction was placed under the professor of preventive medicine, Dr. William Fleming *(6, 42, 43).*

General clinic

The general clinic is staffed by full-time members of the departments of medicine, preventive medicine, and psychiatry, as well as by several part-time physicians—internists, general practitioners, and a surgeon. All members of the clinic staff have had training in internal medicine. Consultations are available daily from the departments of surgery, psychiatry, and obstetrics and gynecology. Social workers, public health nurses, and other medically related personnel are available.

The general clinic is responsible for the care of the majority of the new adult ambulatory patients seen at North Carolina Memorial Hospital. The patients may be indigent or paying patients, but almost all are referred from physicians or health agencies. Medical students do not see all old patients, only those whom they themselves initially worked up; most of the other revisits are seen by residents who rotate through the general clinic, or in one of the specialty clinics. The other clinics include obstetrics and gynecology, orthopedics, otolaryngology, ophthalmology, urology, pediatrics, and psychiatry. A limited number of medical specialty clinics meet in the afternoons as subdivisions of the general clinic. The patients discharged from the surgical wards are followed in a surgical follow-up clinic, but there is no separate surgical clinic for new patients.

Student activities

The outpatient services, including pediatrics and the general clinic, comprise half the fourth year. One-half the class spends 20 weeks on this service. Two-thirds of the time is spent primarily in the general clinic,

and one-third in the pediatrics clinic. While on the general clinic service, students work up new patients every second day, following which they meet with preceptors for detailed discussion of the patients' problems. Consultations are available in the clinic each afternoon. This arrangement enables a new patient to obtain a fairly complete work-up in a single day in the clinic, an important consideration in view of the fact that most come from some distance. On the days on which students do not have new patients, they see patients who are returning for revisits, following which they attend clinic rounds held each morning by senior members of the medical faculty. On these days the students spend their afternoons in one of the medical specialty clinics. This flexible arrangement provides, on new-patient days, maximum availability of the student to see that his patient obtains all possible consultative services; on old-patient days there is a maximum amount of teaching activity. Additional teaching conferences are held in the early morning and at the end of the day.

Until recently, the students selected from among their patients one or two who required frequent visits to the clinic for an extended period of time; these patients were followed intensively by the students for the full 20 weeks. The intensive continuity program has recently been abandoned, primarily because of difficulties in finding suitable patients early enough in the service. Opportunity is still available however, through flexible scheduling, for students to follow adult and pediatric patients throughout the entire period when indicated.

Students are assigned in pairs to the home medical service where, under the supervision of a member of the full-time clinic staff, they participate in the care of a chronically ill patient who is ordinarily bedfast at home. The assistance of public health nurses, social workers, and others is frequently called upon in this activity.

When a patient is admitted to the hospital from the clinic, the student is ordinarily responsible for the ward work-up and for assisting with ward care during the first 24 hours of the patient's hospitalization. Although his direct responsibilities do not continue after the first day, the student is expected to follow the progress of his patient throughout his hospitalization. Weekly rounds on hospitalized patients are held for the students on the general clinic.

Certain other features of the curriculum are closely related to the objectives of the general clinic. In the first year, a course in human ecology is taught by the department of psychiatry with participation by the department of preventive medicine (*11*). This course attempts to give the student some understanding of the social and environmental setting of patients' problems of health and disease. The course involves lectures and seminars with active participation by students as well as by preceptors from many other departments. The second-year course in introductory medicine has been modified to provide interdepartmental correlation; psychiatry, surgery, pathology, and medicine participate. Students are introduced to the physician-patient relationship, interviewing techniques, and history taking, followed by the evaluation and understanding of symptoms

and signs as expressions of disordered function. Physical diagnosis follows this phase and is in turn followed by laboratory diagnosis. Although the content is not significantly different from that presented in most medical schools, the order of its presentation and the emphasis on the understanding of the patient is consistent with the general objectives of the teaching program. This course is continuing to undergo evolution.

Research in patient care

The staff members of the general clinic are engaged in a number of research activities related to problems of patient care. These include studies of referral patterns, assessment of the quality of medical care being given to a group of chronically ill patients, and an evaluation of the follow-up of various diagnostic screening procedures used routinely in the clinic (*1, 13, 14, 44, 45*).

The patient-referral studies have provided information concerning the process of referral of patients to a medical center such as this, including the reasons for referral and the adequacy of communication between the medical center and the referring physician. It was revealed, for example, that half the patients referred to the general clinic came primarily as a result of the patient's request, not that of the physician. Although physician or agency referral is required for all but emergency patients, only half of the referring physicians sent any information with the patient. It was also learned that communication from clinic to physician was inadequate; furthermore, many patients did not return to their original physician. These findings have resulted in changes in the system for sending information promptly to the referring physician (usually the day the patient is seen), and for facilitating arrangements for the patient to return to his physician when discharged from the clinic. The analysis of diagnostic screening procedures demonstrated that the students not infrequently failed to follow up on positive findings when they appeared (e.g., abnormal chest x ray, anemia, suspicious cervical smear, etc.). Significant improvement in follow-up resulted from the institution of new procedures for review in weekly chart conferences.

Discussion

The most striking feature of the University of North Carolina general clinic is that a truly interdepartmental clinic not only provides the core of the teaching program in comprehensive medicine, but also is the locus for the major portion of the ambulatory-patient-care activities of the hospital. The importance of the close collaboration among the departments of medicine, surgery, psychiatry, preventive medicine, and pediatrics is evident. Although under the jurisdiction of the department of preventive medicine, the general clinic is primarily a medical clinic. The faculty

members from the departments of preventive medicine and psychiatry who participate as active preceptors are fully trained and competent in internal medicine, most either having board certification or being eligible for it. The North Carolina group, while believing in an interdepartmental general clinic, also believe that an expert knowledge of internal medicine is necessary in order to be an effective general clinic preceptor.

Cooperation among clinical departments in ambulatory patient care is as close here as at any school with which I am familiar, but there are still difficulties in translating this into inpatient services, even in teaching. The necessity on the wards to deal with acutely ill patients in need of intensive diagnostic and therapeutic services often precludes much successful integration with respect to psychiatry, preventive medicine, and social medicine. The opportunity on the part of students to follow patients from the clinic into the hospital after admission is a notable step in the direction of closer correlation of inpatient and outpatient activities. This is much easier to achieve in this relatively small, closely-knit institution than in the large medical centers.

The central role of the department of preventive medicine is very significant; in this school preventive medicine is an active clinical department. The extensive use of diagnostic screening procedures in this clinic—and the critical evaluation of the usefulness of these procedures—testifies to the fact that a practical orientation toward preventive medicine at the personal level actually prevails here. The rather surprising discovery that a number of positive findings were not followed up does not detract from the effectiveness of this phase of the program; it merely emphasizes the lack of complacency and the prevalence of the attitude of critical inquiry.

There is no separate surgical clinic, although there is a surgical section of the general clinic, primarily a postoperative clinic in which patients are followed after discharge from the surgical services. Patients with surgical diseases are worked up in the general clinic, and then are seen by a surgical consultant who works with the student-physician and the primary medical preceptor in the management of the patient. The integration of surgical teaching into the total clinic experience of the medical students is quite complete. Special clinics in ophthalmology, otolaryngology, orthopedics, and urology do exist, and are outside the general clinic administration. The pediatrics clinic is run separately from the general clinic, but the geographic relationships are such that it is easy for students to follow patients from one clinic while they have assignments in the other. An effective functional relationship is thus provided merely by temporal and geographic correlation of activities. The department of obstetrics and gynecology and most of the surgical specialties do not participate directly in the general clinic program.

The clinic enjoys a higher status relative to that of the inpatient services than is the case in most medical teaching centers. One reason for this is that the department heads, especially in medicine and surgery, are personally committed to the general clinic concept and have a strong

sense of identification with it. All members of the department of medicine participate in rotation in the clinic teaching rounds, just as they do on the wards. Two other factors are undoubtedly important: the high level of academic performance expected of the students and the active research in problems of patient care carried on by members of the clinic staff.

As a result of critical appraisal by the faculty responsible for teaching in the clinic, there have been steady increases in the academic demands placed upon the students. Parallel with this has been the development of a clearer definition of what is expected from the student. For example, on the initial patient contact the student is expected to collect information accurately, identify the primary problems, and plan an appropriate program of action. After the subsequent visits, however, he is to complete a detailed analysis of one of the major problems presented by the patient; this involves some review of the pertinent literature and is considered a significant part of the program of making the clinic activities comparable in academic expectations to the third-year ward clerkships. Tape-recorded interviews have been used to ascertain the effectiveness of teaching. This study, largely stimulated by the work of Hollifield at Virginia *(12)*, has been used to determine the relative effectiveness of various techniques applied in the teaching of interviewing and history taking.

The patient-care research, while not being conducted on the scale of the group at Cornell, is like the Cornell studies related to specific problems encountered in the clinic. The significance of the review of the diagnostic screening tests needs little emphasis. It is obvious that a screening test is valueless unless positive findings are followed up. It is apparent that even in a "preventively" oriented setting such as this the students' attitudes (and presumably those of their faculty) toward preventive and early diagnostic measures for the individual patient are not what they might be. This interesting study emphasizes the need for continual criticism and review of even the best of programs. It is not enough to teach all students to obtain "routine" blood counts, cervical smears, or chest x rays if they (or someone) does not take the trouble to look at the result. It would be of interest to see such a study done in a setting with a less pervasive department of preventive medicine.

The general clinic functions as an effective centralized locus for the care of ambulatory patients and the teaching of comprehensive medicine. It also serves as a pilot activity that may help us to understand some of the functional relationships basic to the planning of future clinical facilities. Unfortunately, the hospital and clinic had been designed and largely built before the plans for the new interdepartmental clinic had been formulated. For this reason it was necessary to place the general clinic in a physical environment that was not specifically designed for this type of patient care. As future construction takes place at North Carolina Memorial Hospital, it may be possible for the faculty to take advantage of their experiences in the general clinic to create a facility that may represent, in physical innovations, the changes in the organization of patient care that are a part of the general clinic.

It is inevitable that an interdepartmental clinic such as this should have had a noticeable impact on other phases of the school's activities. Although the handicaps of providing continuing, comprehensive care in a clinic located in a small community and patronized primarily by referred patients are self-evident, the obvious orientation of the clinic toward comprehensive patient care has had a definite effect on the atitudes of the medical students. The general clinic experience has stimulated among participating faculty members not only a desire to review their teaching activities critically, as mentioned above, but to consider ways in which the students can be better prepared for their role in the clinic. The attempt to place the second-year instruction in medicine into a logical sequence is one example; another is the human ecology course in the first year. Interdepartmental communication is active both with respect to teaching and patient care. In their conversion from a two-year school in 1952, the North Carolina faculty converted the apparent disadvantage of small size and limitations of clinical material into an asset by creating a new nondepartmental clinic for the teaching and practice of comprehensive medicine. In this way the needs of the state for patient-oriented physicians as well as for a center for diagnosis and management of referred patients can be met. Out of these experiences and investigations are likely to come answers to many practical problems in the organization and administration of patient care.

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D. Reorganization of the Medical Curriculum

As an example of the methods by which curricular reorganization can be accomplished in a medical school, the famous Western Reserve experiment is unparalleled. However, the history of the program's development and its content and structure are often misunderstood. Conclusions can be drawn on the significance not only of the objectives, but more particularly of the organization of factors in their accomplishment.

THE COMPLETE reorganization of the teaching program at Western Reserve—an educational experiment now in its tenth year—was the result of a number of influences that prevailed in the years immediately following the second world war. Medical education was in ferment. The school had a vigorous and imaginative new dean who not only saw the need for a careful review of the educational program, but had the opportunity to appoint a number of key department heads early in his tenure. It is the purpose of this section to survey the developments at Western Reserve, for an understanding of this experience is valuable to all interested in medical care and medical education—not only for what was done but also for the ways in which the faculty approached and solved their problems. Although the experiment has been described many times (*3, 4, 7, 9, 17, 21, 22, 26*), there is still unfortunately too little appreciation among faculty members in other medical schools of its background and accomplishments. This is particularly unfortunate in view of the fact that the new program at Western Reserve may well prove to be in its over-all impact one of the most significant developments in American medical education since the Flexner report.

Background and objectives

In 1945 Dr. Joseph T. Wearn assumed the deanship at Western Reserve. He and his associate dean, Dr. John L. Caughey, Jr., saw the need for a careful review of the curriculum, which was crowded with departmental courses and examinations, and offered little opportunity for elective work; rigid departmental barriers allowed little collaboration among departments in teaching. During Dr. Wearn's first five years in office, ten of the thirteen department heads were replaced through death or retirement; he took advantage of this opportunity to select men with fresh ideas, open minds, and a willingness to cooperate with one another not only in research but in teaching as well. One of his first acts was to establish the means by which the entire faculty could participate in decisions regarding educational matters, student affairs, and questions of interdepartmental cooperation. This newly created general faculty, consisting of approximately 200 faculty members, quickly set about the study of some of the more pressing educational problems.

One of the first questions to which the general faculty addressed itself was that of the grading system and the competitive, anxiety-producing departmental course examinations. A committee appointed to look into the problem recommended the consideration of comprehensive examinations; the general faculty rejected the committee's report and recommended that the study be extended to the more fundamental issue of the curriculum itself. A new committee, charged with the responsibility of exploring interdepartmental cooperation in teaching rather than just in administering examinations, offered much more far-reaching recommendations. They suggested that a full-time faculty position be created for the study of medical education, this study to include questions of interdepartmental correlation, teaching techniques, objectives of the educational program, and time allocations. In addition, they recommended the establishment of a representative advisory committee on medical education. They also recognized the desirability of reorganizing the physical facilities for teaching. The following year the faculty agreed on a preliminary statement of objectives, stressing basic knowledge of principles, familiarity with the scientific method, and stimulation of students' curiosity and initiative for self-education. By this time there were also specific recommendations for some integration of the teaching in the first and second years. It became evident that these recommendations were likely to evolve into an experiment of larger scope; a grant was obtained from the Commonwealth Fund early in 1950 for the support of this developing study of the teaching program.

The full-time position in medical education referred to in the preceding paragraph was filled by Dr. Thomas Hale Ham (who wisely insisted on having regular faculty status rather than an appointment in the dean's office). He was appointed chairman of the newly established committee on medical education. From the beginning he insisted on strict adherence to democratic procedures; all policy decisions were reviewed and approved by the general faculty, and were preceded by ample

faculty discussion. With the formal establishment of the committee on medical education as a committee of the general faculty, meticulous rules were adopted regarding its composition, responsibilities, authority, and procedure (*8, 23*). The relationship of this committee to the general faculty, the administration, and the departmental structure was clearly defined. The committee on medical education consisted of a representative from each department, nominated by the department head; the member's tenure was limited, assuring rotation of committee personnel. The committee's responsibilities included formulation of objectives, evaluation of the current program, and development of recommendations for changes in the program of medical education.

Each department was solicited for its views on the aims and content of its own offerings and the aims of the educational program as a whole. These comments were submitted in writing, published, and disseminated to the faculty. A statement of objectives was finally formulated and accepted by the general faculty in spring 1951 (*24*). This statement has subsequently served as the basic policy guide for the educational program. Basic objectives were deceptively simple: to teach medicine as a coherent, meaningful whole rather than a series of unrelated disciplines and to give the student from the beginning of his medical education a feeling for the central purpose in medicine, to deal helpfully with patients.

The statement of objectives included a number of more specific recommendations. The curricular content was to be selected for its importance and organized sequentially, with teaching to be done as a cooperative venture of faculty members from a variety of departments. There was to be no attempt at complete coverage of all areas of medical knowledge, but rather an emphasis on learning to distinguish fact from theory through familiarity with the scientific method and on acquiring an understanding of the patient as a person and as a member of society. The student was to be treated as a maturing individual who could take increasing responsibility for his own education; this implied a mature system of examinations and grades and the provision of free time and electives. As corollaries were the recommendations that the curriculum be divided into three phases for convenience in the organization of instruction; that special facilities be planned for student laboratory work, research, and study; that students follow selected patients or families over an extended period of time; and that students be introduced during the first phase of the program to "the whole human organism."

This statement having been accepted by the general faculty, the guidelines were set for the development of the program itself. The subject committees for the various parts of the three phases began to work. The committees soon confirmed the principle of free time for the students and agreed on the concept of the multidiscipline teaching laboratory. During the succeeding year (1951-52), a great deal of faculty time was devoted to the detailed planning of the program, design of new laboratories, preparation of syllabi, and innumerable meetings of large and small committees to prepare for the class which was to enter the first year of the new curriculum in the fall of 1952.

Phases of the program

The four medical school years are divided into three phases. The first, lasting one year, emphasizes the study of biology basic to medicine: normal human structure, function, growth, development, behavior, and relation to environment. The second phase, one and one-half years, involves the study of the principles of medicine: mechanisms of disease, and its natural history, pathology, clinical manifestations, prevention, and treatment. The third phase, one and one-half years, deals with the care of the patient.

Teaching in all phases is directed by subject committees rather than by individual departments. Each phase is considered as an integrated whole; the topics are taken up, insofar as possible, in logical sequence, without the presentation of specific departmental disciplines. There are three interlocking committees, one for each phase, which formulate the broad plans for the three phases. The major departments involved in the teaching in a given phase are appropriately represented. The subject committees for the specific topics covered in the various phases are established under the guidance of the phase committees. Each phase has a coordinator who reviews the plans of each subject committee and sees that the appropriate departments are consulted for their approval with respect to content and personnel.

Phase I

The activities in Phase I consist of the subject committee material, clinical science, student projects, and free time. The topics covered in the Phase I subject committees include cell and tissue biology; neuromuscular, cardiovascular, and respiratory systems; metabolism; endocrines; and reproductive system. Faculty members from a number of clinical as well as preclinical departments participate in these subject committees. (As might be expected, the section on cell biology is primarily taught by biochemists, tissue biology and neuromuscular system primarily by anatomists and physiologists, metabolism by anatomists, biochemists, and physiologists, and so on.)

Approximately one half-day each week is devoted to the clinical science program, which consists of lectures on psychology, sociology, economics, and anthropology, and an experience with a family in the family clinic. Early in the first year the student is introduced to a pregnant woman who will deliver during the next few months. He sees the patient on her visits to the prenatal clinic, makes visits to the home, and gains some knowledge about her and her family. He follows the newborn child in the family clinic through Phases I and II and, if he wishes, through Phase III. Each group of eight students is guided by a clinical preceptor, as well as by the pediatric and obstetrical staff.

An independent research project is required of all students. Initially, one day each week was allocated for this purpose; more recently the project time has been changed to a four-week period at the end of the first year to enable the students to concentrate more effectively on their

project work. During Phase I (and Phase II as well) students have one and one-half days a week, in addition to Saturday afternoon and Sunday, completely free. Before the projects were shifted to the four-week block of time at the end of the year, many students spent a good deal of their free time in laboratory or library work related to their projects. Most of the students now spend the time studying or in the family clinic, although the faculty makes no formal attempt to account for the use of free time.

Phase II

Phase II, occupying one and one-half years, covers cellular and tissue injury, chemical agents (pharmacology), infection, and disorders of the cardiovascular, respiratory, urinary, hematopoietic, locomotor, nervous, and endocrine systems. The clinical science section continues, including physical diagnosis and history taking, additional lectures in psychiatry and other subjects, and the study of the family, which began in Phase I. In Phase IIb, which occupies the first half of the third year, students participate in a "clinical project" in which they make an intensive study of a patient with a chronic disease.

The preceptors for Phase I continue as preceptors in Phase IIa, (second year); their function is still primarily related to the family clinic and to helping the student become oriented to his new responsibilities. The preceptors for Phase IIb are the supervisors of the clinical project. Independent research projects which were begun in Phase I are continued in Phase IIa, with approximately four weeks provided for this purpose at the end of the second year. Students may elect in Phase I or Phase II to use the one and one-half days per week of free time for independent projects, thus providing a block of free or elective time at the end of the first or second year.

All laboratory teaching in Phases I and II is carried out in multidiscipline home laboratories. These were designed to provide the student with one place in which he could perform the required laboratory experiments, study, or work on his independent research projects. The details of their design and operation have been described by Spilman (*19*).

Phase III

The third phase, the application in the care of patients of what has been learned in the first two and one-half years, occupies 16 months. Four months are devoted to the basic clerkship, and two months each to the group clinic, obstetrics and gynecology, surgery, surgical specialties, elective clerkships, and vacation.

Phase III begins in the second half of the third year with a four-month basic clerkship in either medicine or pediatrics. Students study intensively a limited number of patients, the emphasis being on the acquisition of a thorough knowledge of the individual patient, including mechanisms of disease, epidemiology, treatment, and relationship of significant emotional, social, and economic factors. In the group clinic (*1*), a two-month

ambulatory patient clerkship, the students provide comprehensive care for ambulatory patients. The clinic staff is composed of internists, psychiatrists, and social workers, with consultants available from the various specialties. The student is responsible for the management of his patient; consultants come to the clinic rather than requiring that the patient be sent to other clinics for consultation. The two-month clerkship in obstetrics and gynecology is arranged in such a way that the students are usually able to provide prenatal care for patients whom they will deliver on the clerkship. This arrangement is possible through the continuity clinic, to be described below. The clerkship on the surgical wards lasts two months and provides, with the two-month clerkship in surgical specialties (primarily an outpatient service), an exposure to the more common surgical conditions and procedures. (When the new curriculum was first adopted, general surgery and the surgical specialties were elective.) The clerkships in the group clinic, surgery, specialties, and obstetrics and gynecology may be replaced by other activities if the student can justify this change. The elective period of two or more months in Phase III is designed to enable the student to study in detail subjects of special interest to him. He may continue with research projects, take elective clerkships, or act as a teaching assistant in Phase I or II. At present most students tend to elect either pediatric or medical clerkships, depending on whether their basic clerkship was on medicine or pediatrics, since many of them feel somewhat insecure in the face of impending internships.

The continuity program, occupying one afternoon each week through the entire 16 months, is devoted to the care of ambulatory patients in the student's own "office." The patients for the continuity clinic usually come from four sources: obstetrical patients receiving prenatal care during the few months prior to anticipated delivery, which will coincide with the student's service on the clerkship in obstetrics; members of the student's "family" carried from the first year; patients with chronic diseases requiring long-term supervision; and patients who present specific problems in rehabilitation. The students' consultants in the continuity clinic are the preceptors for Phase III. Each group of eight students meets with the preceptor at regular intervals; he may function primarily as a clinical tutor or as an academic counselor or advisor (*5*).

One-half day each week during Phase III is devoted to the bioclinical study section, whose purpose is to reinforce the learning of the basic biologic sciences and to emphasize their relationship with clinical medicine. Faculty teams representing clinical and basic sciences participate.

Grades and examinations

The system of grading has been altered so that only *pass* or *fail* (and recently *honors*) grades are given. Students are not ranked. Examinations covering the various subject committees are corrected and returned to the student without record being made of the student's score; in this way it is hoped that the student will learn from each examination and

yet will not be under pressure to strive for examination grades per se. National Board Examinations are taken at the end of Phase II and Phase III, but are not utilized for grading or ranking.

Evaluation studies

Both intramural and extramural studies have been and are being carried out to evaluate the program. The need for evaluating the effects of the new curriculum was seen during the planning stages (*6*). A comparison of the new curriculum with the previous one at Western Reserve can be made only to a very limited extent. Once it had begun there was naturally some reluctance on the part of the faculty to institute any comparative testing that might suggest that the students in the old curriculum were in some way competing with those in the new curriculum (which was "phased in" one year at a time). Comparison of student performances on National Board and intramural examinations has been made to a limited extent; these measures demonstrate no significant change in the acquisition of factual knowledge by the students.

It is more difficult to measure the effects in relation to the fundamental objectives. A true evaluation in this area could be made only after the graduates are in practice, and even then assessment of the influence of the four years in medical school, as distinguished from all other influences, would be very difficult (*18*). The Bureau of Applied Social Research at Columbia University made a careful study of the development of student attitudes, using Western Reserve students in both the old and new programs (*15*). When this information is completely evaluated and published, some insights into the ways in which the program influenced medical student attitudes may be acquired. On the basis of information available from these and other studies, Western Reserve students appear to perceive their faculty as being more interested in helping them than is the case with students at other medical schools; there appears to be more interest in self-education, less anxiety, less competitiveness, and yet no diminution in desire for academic or intellectual achievement (*14*). These data would certainly suggest that, as far as student-faculty relationships and student attitudes toward their educational experience are concerned, the new program has been very successful. In the area of attitudes toward patients and toward medicine generally, objective information is somewhat less clear, although members of the faculty at Western Reserve are strongly of the opinion that the students have much healthier attitudes toward their patients than was formerly the case (*12*).

Discussion

Any program, whether it be new or old, can be evaluated only in terms of its own objectives and those of medicine and medical education. The faculty at Western Reserve defined objectives clearly, designed a program

to implement them, and established some procedures for evaluation. Although it is still too early to make a definitive appraisal of the new curriculum at Western Reserve, some effects are readily apparent. One important measure of the success of the program is the enthusiasm of both students and faculty. It would be difficult to find a single faculty member who is willing to return to the old system. Because many facets of the new program were designed either to solve existing problems or to aid in the attainment of specific objectives, each major aspect will be considered below in light of its significance to the program as a whole, to the objectives of the faculty, or to medical education in general.

Organization

The organization of the faculty on a democratic basis and the establishment of the representative committee on medical education insure that the educational program will not remain static. The careful system of checks and balances among the three major branches of the school government (administration, departments, and general faculty) and the clear definition of responsibilities in each area provide a model of faculty organization (*8, 23, 25*). Policy with respect to educational matters lies with the general faculty (now about 350 members) to which the committee on medical education is responsible. The various subject committees report to the committee on medical education, which itself is a representative body. Actual administration of the day-to-day activities of the program takes place through phase coordinators and assistant deans, and through the associate dean for student affairs. In these ways the carrying out of policy and the smooth working of the machinery is appropriately an administrative function.

The departments, the third responsible branch, have not given up their autonomy with respect to faculty matters, budgets, research, and graduate programs, including both graduate student activities in the basic medical sciences and residencies and fellowships in the clinical areas. Although the responsibilities of the departments with respect to educational programs are somewhat different from those in most medical schools, there is no diminution in the importance of the department structure in the over-all organization of the school.

The amount of communication among faculty members is extraordinarily great. An annual meeting is held at the close of each school year at which 80 or 90 of the faculty members most directly concerned with the teaching meet for two days in the country to review the progress and problems of the past year and to make plans for the coming year. This conference is preceded by extensive study and informative reports from the various committees concerned with the specific topics under discussion. The mechanism for rotation on key committees, both the committee on medical education and the various subject committees, insures not only that continuing critical review will be given to all phases of the educational program, but also that a great many faculty members will participate actively in decisions concerning educational matters.

Subject-committee teaching

The subject-committee teaching was planned specifically to carry out the educational changes that have taken place at Western Reserve. To many observers this appears initially to be the most radical of the alterations. However, the actual organization of many of the subject committees tends to be departmental by virtue of the nature of the material; the change in this respect is not actually as radical as it might superficially appear. For example, the section on cell biology in Phase I is taught primarily by biochemists; tissue biology and neuromuscular system is taught by anatomists and physiologists, and so on. The second point of interest is that the philosophy and orientation are so clearly agreed upon by the great majority of the faculty that even if the subject matter were divided strictly on a departmental basis, there would probably be little change in the program.

Contrary to the fears of many (especially in other institutions), subject-committee teaching has not proved to be significantly more time-consuming for the individual faculty members than the traditional departmental system, once the planning stages of the initial years were completed. Instructors may present portions of their material at various times of the year, and in various years of the curriculum, but the schedules are worked out well in advance and there is no serious interference with planned research or other activities. Some concern has been expressed by observers that teaching may tend to become superficial with excessive stress on "principles" as a result of the subject-committee approach; I have not been able to determine that this has taken place. The rather heavy reliance on specially prepared syllabi for the various subject-committee topics has been criticized, but these outlines are liberally supplemented with references to textbooks and the current literature. In my opinion, subject-committee teaching is merely a method of expressing the faculty's views toward the content and organization of the material considered to be of basic importance.

Grades and examinations

Just as the subject-committee teaching reflects the faculty's attitude toward curricular content, so does the examination and grading policy reflect their attitude toward medical students. In an attempt to treat the student as a maturing individual, the faculty has devised a mature system of examinations and grades. As mentioned previously, class rankings and numerical or letter grades are not used. An examination is given at the end of each major subject-committee topic (about four or five each year) and at the end of each phase. These are corrected and returned to the student. No grade is recorded unless a student is doing failing or borderline work. In this case, the examination results are used for counseling the weak student. Class standings are not recorded; instead there is an attempt to have each instructor who has had contact with a student describe his strengths and weaknesses. These comments are

used for counseling, not for ranking. The impact of this policy on lessening students' anxiety and increasing their awareness of the faculty's desire to help them is strongly evident from the first year onward. Recently the addition of the honors grade has been introduced (in addition to the original pass-fail) for those students who perform extremely well as rated by preceptors, laboratory and research project supervisors, and others who can observe them personally. Since introduction of this grade two years ago, there has been no evidence that student anxiety, tension, or competitiveness with respect to examinations has increased as a result.

Free time

The provision of one and one-half days per week of completely free time during the first two and one-half years and the provision of two or more months of free or elective time in Phase III are additional reflections of the policy concerning student maturity mentioned above, as well as that of encouraging student initiative for continuing self-education. As might be expected, there has been concern on the part of some members of the faculty about coverage of essential subject matter. This has been reflected over the past several years in a diminution in the amount of free time and elective time during the clinical years. When the program was established the students were given approximately six months of elective and free time in Phase III, and were required only to complete the basic clerkship, group clinic, the clerkship in obstetrics and gynecology, and continuity clinic. Since that time the clerkship in general surgery and the clerkship in the surgical specialties have been introduced as assigned clerkships. It is possible for a student to make arrangements to spend his time in other ways if he can justify this to the faculty, but few have done so. Some faculty members are concerned that the introduction of these additional required clerkships represents a backward step and too great a concession to coverage. On the other hand, at Western Reserve as elsewhere most fourth-year medical students are greatly concerned with the internship and the demands that it will make upon them; this apprehension caused many students to choose elective programs that they thought might be useful as preparation for the internship, rather than those that might provide the most satisfactory long-term benefits. The additional assigned clerkships represented an attempt on the part of the majority of the faculty to resolve this dilemma in a manner consistent with their objectives.

Projects

Independent student research projects were introduced for the purpose of encouraging student curiosity and initiative and acquainting students at first hand with the scientific method and the scientific literature. It was not necessarily intended that the projects would stimulate interest in medical research per se. The flexibility of the curriculum is exemplified by the change in project time from the original one day per week through-

out the first and second years to four-week periods at the end of Phases I and IIa (the end of the first and second years). While there may be some question as to the validity of the concept that laboratory research is the ideal method for acquainting students with the scientific method, there is no question that many of the faculty members at Western Reserve consider this one of the most valuable aspects of the program. Some also express reservations about it (*12*).

Multidiscipline laboratories

This is one contribution of the Western Reserve program that is completely noncontroversial. A number of other medical schools have borrowed this idea and adapted it to their own situations, whether or not they have made use of the interdepartmental subject-committee teaching that was the genesis of the multidiscipline laboratory at Western Reserve. The laboratories serve two functions in implementing the school's objectives: they enable the interdepartmental teaching to take place effectively, and they provide the medical student a place of his own for laboratory work or study (and occasionally for research projects) for an entire year. The goal of considering the student as a maturing individual is certainly enhanced by these facilities. The economic advantages are likewise appealing, since the laboratories are fully occupied the year around, eliminating the wasteful duplication of traditional departmental teaching laboratories.

Preceptor system

During each of the four years, students in groups of eight meet at least once a week with their faculty preceptors. There is no question that the preceptorship program has improved communication between students and faculty (*11*). The most important factor in its success (as with successful preceptorship programs in other schools) is that the preceptor serves as a teacher, not merely as a counselor or a vaguely defined buddy. Alterations have been made in the assignment of the preceptors in order to achieve maximum effectiveness with respect to the students' needs. The preceptor for the first two years functions in a close relationship to the student's activities in the family clinic. In the first half of the third year (Phase IIb) the preceptor is the instructor in the student's clinical project which serves as an introductory experience with sick patients and helps to introduce the student to the significance and value of the continuity program of Phase III. The preceptor in Phase III is the instructor in the continuity clinic and helps to orient the students to the objectives of that service.

Family clinic

The early introduction of the student to the living patient is now a common practice in medical schools in the United States (*2, 13, 16, 20*). The combination of gradually increasing responsibility for a patient, dealing with normal situations (pregnancy, childbirth, and infant growth

and development) rather than pathologic situations, and the close association of the student with a helpful, interested, and skilled faculty preceptor provides an opportunity for the student to benefit maximally from this experience. It is not surprising, however, that there is some dissatisfaction with this program on the part of the faculty. The goals of the family clinic program are somewhat less clearly defined in the minds of many faculty members that are those of most other aspects of the curriculum. Any phase of a medical school program that has as its primary purpose the development of attitudes rather than the acquisition of factual knowledge runs the risk of creating anxiety and even hostility on the part of many faculty members whose orientation is primarily toward the biological sciences or clinical investigation. It is to be expected that as the program evolves some additional content—in terms of human behavior, growth and development, and the like—may diminish some of the concern held by those on the Western Reserve faculty who believe that this program is not working as it should *(12)*.

Initially the students were expected to follow their family clinic patients for the entire four years. This is now not required in Phase III but may be done if the student believes that continued following of his family would be profitable. By the time a student reaches the position where he is able to take a certain amount of responsibility for patient care, it becomes evident that a situation such as this loses much of its meaning if the patients are not actually in need of the student's attention. What was to a first-year student an exciting and challenging experience becomes for the fourth-year student only an exercise. Whether or not the change was for the better, it represents again a willingness on the part of the faculty to alter the program in the light of their experiences and in the light of a realistic appraisal of student and faculty attitudes and reactions.

Group clinic

This is an eight-week clerkship in ambulatory medicine that provides an opportunity for the provision of comprehensive medical care under close supervision of internists and psychiatrists and with the consultation of surgeons, social workers, and others. Although it is only an eight-week clerkship, the close integration of the group clinic activities with those of the 16-month continuity clinic enables many students to have a very satisfactory experience in providing continuing comprehensive medical care.

It is of some interest that as a result of the experience in group clinic the department of medicine has reorganized the medical clinics along similar lines: instead of a series of specialty clinics which refer patients back and forth for consultation, there is a series of medical clinics, each with its permanent staff and with its more or less permanent group of patients. For example, the hematologists will see most of the patients with blood disorders, but if one of their patients develops the need for cardiologic consultation this will ordinarily be done by one of that clinic's

own cardiologists; surgeons, psychiatrists, dermatologists, and others will be attached to these clinics as well, so as to minimize referral and loss of contact and continuity of patient care. Although there may well be many problems in this reorganization, the point of interest is that in designing clinics to demonstrate for students a better kind of patient care the faculty were forced to improve the arrangements for care of the ambulatory patients who were not in the student clinic.

Continuity clinic

As described above, each student spends one half-day each week for 16 months in the continuity clinic in Phase III. The goals of this experience are clear enough, but in practice it has been difficult for the students to maintain a high level of interest. The management of ambulatory patients with chronic illnesses or psychosomatic problems is not appealing to most students at a time when they are nearing their internship, with its demands for skill in diagnosis and management of acute situations. Certain alterations have been made in the continuity program so it is more closely correlated with the students' experiences in the group clinic. There is still no workable method for attaining optimal correlation between the inpatient activities and those in the continuity clinic, however, with the exception of the prenatal and postnatal phases of the obstetrics clerkship.

The three activities just described (family, continuity, and group clinics) reflect a serious attempt on the part of the faculty to provide: continuity in clinical teaching throughout the four years; a graded increase in responsibility of the students for patient care; experience with continuing, comprehensive medical care; and a recognition of the social and psychological forces that impinge upon the practice of medicine. The activities were specifically designed in response to the faculty's concern with inadequacies in the previous program, and their desire that the clinical teaching program more nearly prepare students to meet some of the challenges they will face as physicians in the future. In all these aspects the activities provide specific means of attaining certain of the objectives described earlier.

Basic clerkship

The basic clerkship was designed to provide all students with an introductory clerkship in the application of the principles of medicine to patient care. The decision to provide a clerkship that is basic, rather than the standard third-year clerkships in medicine, surgery, and pediatrics, was fully consistent with the faculty's goal of arranging subject matter and student responsibility in a logical sequence. Although now in its eighth year, the basic clerkship is still not completely satisfactory to the Western Reserve faculty. For the most part, the basic clerkship is quite similar to good medical or pediatric clerkships in other medical schools. Attempts are still being made to improve it as a clinical learning experi-

ence, without at the same time divorcing it from the realities of patient care in the teaching hospitals. Whether the students' educational requirements will ultimately call for the design of a special clinical teaching environment, analogous to the multidiscipline laboratory, still remains to be seen. The principle that complete coverage of medical information and specialties would not be attempted was implicit in the concept of the basic clerkship. As might be expected, there has been difficulty in reaching agreement on just what basic principles of clinical medicine and patient care should be required of all students.

Division of research in medical education

This division was an outgrowth of an original subcommittee on evaluation of the committee on medical education (*6*). It is certainly significant that a school in which a far-reaching educational experiment has taken place has seen fit to establish a permanent division with a mission to study the educational process. The division's current studies relate primarily to appraisal of attributes of medical students as they are admitted, the process of formation of student attitudes, the performance of graduates of Western Reserve, and an exploration of graduate education in medicine as a university discipline. Faculty attitudes have been studied (*12*), as well as techniques for evaluating student clinical performance (*10*).

When Dr. Ham's tenure as chairman of the committee on medical education expired, he assumed the directorship of this new department-level organization. It was considered essential that, although techniques from the disciplines such as psychology, sociology, anthropology, and education would be employed in the various studies, the director be a physician intimately familiar with the problems of medical education.[1]

Conclusions

There are many lessons to be learned from the Western Reserve experiment. Some of the most interesting examples of faculty activity and innovation have been listed above. The basic objectives were simple and yet understandably difficult to accomplish. It is noteworthy that the faculty not only drew up a statement of objectives but actually used it as a living guide to policy and procedure; it still serves that purpose. Early in the faculty's deliberations the over-all goals were stated as being basically twofold: to teach medicine as a meaningful whole and to emphasize from the beginning of the course the purpose of medicine—to deal helpfully with people. There is no question that great steps have been made toward the achievement of both these fundamental goals.

The actual curricular change was not radical. The amount of scheduled time was not greatly diminished and the subject committees have tended

[1] The report of the division's initial studies is now in operation; it will include a definitive account of the evolution and operation of the Western Reserve program and should be required reading for all who have an interest in medical education.

toward departmental representation by the nature of the subject matter presented. The most significant change at Western Reserve was one of attitude, both toward the content of medical education and toward the medical student. The most obvious results can be seen by superficial observers in the enthusiasm of the well-informed faculty and in the relaxed and yet mature behavior of the medical students.

Although dramatic changes have taken place in faculty attitudes toward students and their expectations of them, it is not clear that specific emphasis in selection of students is given to those attributes, whatever they might be, that are most necessary for success here as compared with a school with more traditional or authoritarian attitudes toward students. It is assumed, and probably correctly, that the applicants themselves make this sort of selection when they decide on the schools to which they wish to apply and establish their priorities in case of acceptance.

Parallel with the educational ferment at Western Reserve, there has been no diminution in research activity or productivity. On the contrary, its relative stature in this area has if anything increased. More than a dozen faculty members have received appointments as department chairmen and deans in other medical schools during the past several years. Dissatisfaction with the new curriculum has been an exceedingly rare cause of faculty departures.

It should be emphasized again that while members of the Western Reserve faculty were not unmindful of the attention of the rest of the medical world, they made changes they perceived to be necessary in order to correct defects in their own curriculum. These problems were seen primarily as spoonfeeding (or lack of a truly graduate atmosphere in medical school), an inflexible lock-step curriculum which failed to take into account different aptitudes and interests on the part of students, and a lack of correlation and interdepartmental cooperation in teaching, with the resulting presentation of the study of medicine as a collection of many independent, unrelated disciplines. Faculty concern was also with student attitudes, which seemed to be too greatly focused on grades, examinations, and cramming, and too little on self-education, understanding, and consideration for patients. In order to do justice to the school and its faculty, one must keep in mind the fact that they are attempting to solve their own problems as they see them, and are not trying to create a blueprint for medical education to be followed unthinkingly by others. Other schools can benefit not only by observing their solutions but more significantly by studying their methods of approach.

It is not often, of course, that a dean is in a position to replace the great majority of his department heads in a five-year period; there is no question that this coincidence and the careful selection of the new department chairmen by Dr. Wearn were of critical importance in the subsequent developments at Western Reserve.

A measure of the significance of the Western Reserve experiment can be achieved by recalling the status of medical education ten years ago

and considering some of the aspects of the Western Reserve program described above, which if not actually incorporated into the programs of other schools, are at least appreciated as being significant steps toward the solution of some of the problems of medical education. Perhaps in the broad sense, the most significant over-all contribution might be that the faculty members of Western Reserve have reminded the rest of us in a tangible way that the medical student is the focal point of medical education. Expressed another way, the essence Western Reserve is that they have actually put into practice some of the reforms which other medical educators have been talking about for the past 50 years.

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E. Founding a New Medical School

The opening of a new medical school is always an event of interest, but because the conception and evolution of the plan of medical education at Florida involved some unique features, this school warrants special attention at this time when many new schools are in the planning stage. An unusual amount of thought and planning preceded the establishment of the school; a concern for the needs of a rapidly changing state guided the preliminary thinking. A specific concern with education for the understanding of patients has influenced the organization of the school and the design of curriculum and buildings.

Background and objectives

IN 1956 THE College of Medicine at the University of Florida admitted its first class. Several years before the authorization in 1949 by the Florida legislature to establish a school at the University of Florida, a citizens' committee had made a careful study of the educational needs of the state; out of this and subsequent studies came the specific legislation implementing the new school. Once the recommendation for the medical school was approved, expert committees were formed to make specific recommendations concerning the new school's organization, policies, and location. A great many modifications have been made since the submission of the report of the medical center study committee directed by Dr. Russel S. Poor, subsequently to become provost of the health center (*10, 11, 12, 13, 15*), but the broad outlines and general timetable have been followed very much as originally charted.

The report called attention to the rapid changes taking place in Florida, specifically the transition from a simple, sparsely populated, rural, agrarian society toward one which was becoming complex, with a multiplicity of

cultural groups, an increasing population density, and a trend toward urban and suburban patterns of living. The report recommended that the needs of the state should determine the nature of the new school and its program. The planners foresaw the need for expanded health and welfare services, and they recommended the adoption of the concept of the health center in which the various members of the health team could be educated to meet the needs of Florida. The emphasis in the educational program was to be on the study of man. Because of the need for research into the health problems of the area, the school was to be charged with this as a specific responsibility in addition to the responsibility of supplying 50 new medical graduates each year. After careful study the committee confirmed the recommendation of a previous medical advisory group that the new school be located on the university campus at Gainesville, rather than in one of the population centers on the coast; this decision recognized the importance of the university atmosphere to the achievement of the general goals of the health center.

Dr. George T. Harrell, Jr., assumed office as dean in 1954; he had not only served on the planning committee but had already had experience with experimentation in medical education in another new medical school (*9*). The specific educational objectives were further developed and implemented under Dr. Harrell's leadership; these principles guided the evolution of the educational program (*5*). In addition, they formed the conceptual basis for the detailed planning of the physical facilities and served a useful function in the selection and recruitment of the faculty (*6, 7, 8*).

First of all, it was agreed that the primary role of the university was education specifically to meet the future needs of the state. Since the great majority of students seeking training in the health fields would expect to practice their profession, the educational program should be directed primarily toward the education of practitioners. On the assumption that the practice of medicine primarily deals with people, the program was to be planned around interpersonal relationships, with the emphasis on understanding people, their behavior, and their problems. The personal responsibility of the physician for the welfare of his patients was stressed. Recognizing that the basic unit in our society has been the family, it was assumed that the primary function of the school was to be the education of family physicians for the future practice of medicine in Florida, whatever shape it might take.

It was stated that since the ultimate responsibility for patient care rests with the family physician in the local community, he must be aware of the help he can get in his community and in the state. All members of the health team in the community should be familiar with the same basic concepts; the talents of each person can be used better and more effectively if he understands not only his own role, but the role of all others who assist in patient care. From the standpoint of the education of personnel in the allied health professions, it was emphasized that the same common thread of human biology must run through their education as

through that of the students in medicine. (The health center was to consist of four closely related schools: medicine, nursing, pharmacy, and health-related services.)

The changing trends in medicine, the increase in population, and the relative scarcity of physicians require that the university examine the role of consultants and determine who can most usefully serve specialized functions. Ways must be found by which the physician can be relieved of those parts of his job that can be equally well done by other trained people. The same might be said for the nurse and the other professionals on the health team.

Additional goals basic to the concept of a university education were the development of thinking and reasoning, encouragement of habits of self-education, and experience with the use of the scientific method in the solution of problems. The responsibility of the professional person for taking positions of leadership in the community requires that the university consider the education of the citizen as an important part of its program.

The professor of medicine at Florida has expressed his views on the goals of clinical teaching as follows: "The theme of clinical teaching in medicine should be the solution of a patient's problem. . . . Clinical education is an orderly continuum of increasing contact with patients, knowledge, responsibility, judgment and skill. It is based on training in the application of the scientific method to the problem of a patient, the trainer and the trainee working together as colleagues" (*14*).

Faculty

Dean Harrell set about the selection of a faculty with the same meticulous care he applied to all other phases of the planning. By assuring himself that all faculty members believed in the goals of the school and the concepts on which its program was to be based he was able to guarantee that the careful preliminary planning would not fail in the execution through lack of faculty support. In addition, he was looking for youth, enthusiasm, and productivity in research. At the time of appointment none of the department heads was yet 40. The faculty has proved to be experimentally minded, willing to change, and willing to express openly any disagreements concerning methods of achieving objectives. This attitude, plus the normal stimulus of being attached to a vigorous new institution has produced a faculty group with a strong *esprit* and able to communicate easily with one another.

Before the first faculty member was hired (and long before the hospital was completed) a careful plan for administering income from patients' fees was agreed upon. All new faculty members, in addition to meeting the criteria described above, had to be willing to accept the concept of "true full-time," with their income not dependent on the number of paying patients they saw. Dr. Harrell consulted with the leaders of the

state medical society, many of whom were on his advisory board, and received their full approval before moving ahead with his plan. In this way he not only obtained a highly workable and educationally oriented program for administration of fees from private patients, but did so without encountering the opposition that often results from misunderstandings and lack of communication between medical schools and local medical groups.

All patients were to be referred to the health center by their physicians or agencies responsible for their medical care. All patients would be teaching patients, to be seen by medical students as well as by the house staff.

Students

The student body is chosen primarily from Florida and adjacent Southern states. About half the medical students have had their preprofessional education on the campus of the University of Florida, a circumstance which facilitates the attainment of close integration of the professional and graduate phases of the educational continuum. With respect to admission policies, the school attempts to stress the acquisition of basic principles as the paramount consideration of a premedical program. An effort is made to explain the reasons underlying the course requirements in biology, chemistry, and physics (e.g., biologic variability, adaptability, scientific method, logical reasoning, experimental error, and so on). Applicants are reminded that medicine deals with individuals who react to their physical, cultural, and social environment, and are encouraged to include in their premedical preparation a study of the forces that affect human behavior.

Educational program

The objectives and philosophy guiding the school have been reviewed in some detail in the preceding paragraphs, not only to emphasize those features unique to Florida, but also because they were used meticulously as guides to the design of the teaching program. The goal of closely integrating the professional schools into the university was a significant one. The location of the health center on the edge of the campus was a tangible step in this direction, although the belief that students in the various health professions should receive their education side by side has not yet been carried far into practice. The faculties in the various schools in the health center are closely associated, however, and communicate freely with one another. In addition to the fact that about half of the medical students come from the Florida campus, the communication of ideas is further facilitated by the fact that many members of the medical school faculty teach elsewhere in the university; their offerings range from scientific courses to philosophy and English literature.

The theme of human biology running through both the premedical and

medical programs at the university is reinforced by features of the medical and premedical curricula as well as by activities and interests of the faculty. The first two college years at the University of Florida are devoted to a program of general education, required of most undergraduates. The upper division provides the opportunity for specific preprofessional education and for the acquisition of knowledge in depth, as contrasted to the more general comprehensive courses in the lower division. This system may have had some bearing on the proposal, at one time seriously considered, that the College of Medicine develop a 2-4-2 plan of medical education (*4*); this would have entailed two years of general education in college, four years of integrated liberal arts and professional study, and two years of clinical work. The proposal was rejected on the grounds that it might create the hazard of isolating the clinical phases of medical education from their university base, and result in returning clinical education to a semiproprietary status.

The medical curriculum itself has been undergoing continuing change since the initial class entered in 1956. In over-all outline, the program does not appear to be radically different from a traditional curriculum. In many areas, however, clear attempts are made to implement the objectives described above.

First year

The first semester is devoted primarily to the study of gross anatomy and biochemistry, and the second semester is devoted to microscopic anatomy, neuroanatomy, and physiology. There is an attempt in the laboratory to emphasize the concepts of individual variation and the use of the scientific method; the use of the students' own observations is stressed rather than standard laboratory exercises. Specially designed teaching laboratories facilitate flexibility in the teaching program, although true multidiscipline laboratories of the Western Reserve type are not employed (see Section D of this chapter).

Throughout the entire first year the students participate in an interdepartmental course entitled Introduction to Medicine, offered by a combined faculty from the departments of medicine, psychiatry, pediatrics, psychology, sociology, and education. This comprehensive course in human development was designed specifically to implement some of the basic educational objectives. The goals of the course are to help the students acquire skill in use of the scientific method to study human behavior, to apply this skill and the knowledge derived from their studies in practical situations, and to become aware of the ways in which their own personality characteristics may be of importance in the doctor-patient relationship. The methods used include didactic presentations, assigned readings, direct observation of normal school children, and many nondirective situations that require the students to think out problems for themselves. It is believed that a deeper and clearer understanding of human growth and personality development is provided in this way than through the usual didactic lecture and demonstration courses (*1, 2, 3*).

Second year

There is a good deal of flexibility in the order and manner of presentation of much of the second-year material, largely as a result of active cooperation between the departments of pathology and microbiology during the first semester. Pharmacology is offered in the second half of the first semester. The second semester is devoted to an interdepartmental course in systemic pathology, in which both clinical and preclinical faculty members participate. In addition, courses in physical diagnosis and history-taking and experimental medicine are offered. The latter course emphasizes the application of the scientific method to basic problems in the medical sciences; students carry out original projects under the supervision of members of the various departments of the school. An introductory course in psychiatry includes the examination of patients by the medical students and discussions of the findings; the department of medicine cooperates in the instruction in interview techniques. This course further emphasizes the faculty's concern with interpersonal relationships in the practice of medicine.

During both the first and second years, the students have approximately one full day each week (in addition to Saturday and Sunday) as unscheduled free time. Students may take elective courses in the university, carry out individual research projects, or use the time in other ways.

Third year

The third year has already undergone several changes, but the basic goal remains the same: an introduction to the study of the patient rather than an exposure to specialized disciplines in medicine.

Initially the third year was dominated by the general clinic, but because of a number of operational problems this clinic has now been shifted to the fourth year (see below). The third-year schedule consists of a basic clerkship, which starts shortly after completion of the second year, and clerkships in medicine, surgery, pediatrics, and psychiatry. The basic clerkship, which has varied in length from four to eight weeks, emphasizes the use of the routine diagnostic techniques. Students are assigned patients without regard to the service on which the patients are located. The pace is geared to the students' capabilities, with an average of one new patient initially assigned each week. Extensive library work is expected of the students.

The emphasis in all the clerkships is primarily on the basic education of future physicians, rather than the specialty aspects of the disciplines. For example, in the obstetrics-gynecology clerkship, the approach to normal pregnancy and prenatal care is stressed, rather than the mechanics of delivery; students perform only a limited number of deliveries on the service. By de-emphasizing the technical aspects, it is hoped that the broader subject of the care of the woman during her childbearing period can be emphasized. Prenatal care, preventive and early diagnostic measures, and diagnosis and management of the common gynecologic problems all receive emphasis in this clerkship.

Fourth year

The fourth-year program has been altered in consequence of the third-year changes mentioned above, and will undoubtedly continue to undergo change. (It should be remembered that the first class completed the fourth year in 1959-60.) The program involves required clerkships only in the general outpatient clinic and in obstetrics. (Some radiology and surgical specialty experience are provided in the general clinic.) The remainder of the fourth year, approximately 22 weeks, is devoted to elective clerkships, student research, or other activities. Further evolution of the program will occur as the faculty explores various methods of attaining educational objectives.

An important philosophic point with respect to clinical teaching is that no specific content or coverage of factual material is expected. There is an attempt to do no more than emphasize the basic underlying concepts, and to stress these by means of active participation on the part of the students. It is believed that medical students do not need to be exposed to all disciplines of medicine. The principle that education for practice comes after the medical school years is adhered to in this respect. There is no great concern on the part of the faculty that most of the students will receive no formal instruction in many specialty areas. It is believed that these specialties belong in the internship and residency, rather than in the undergraduate medical curriculum. This is consistent with the primary objective of providing students with the basic tools for the study of patients and for dealing with patients as individuals, rather than providing students with the diagnostic and therapeutic skills necessary for the practice of medicine.

The general clinic provides a specific example of the application of this philosophy. All patients coming to the teaching hospital for the first time are seen in this clinic regardless of the specific problem for which they have been referred, although there are exceptions in the case of certain obstetrical and psychiatric problems and in the case of private patients referred to a specific member of the faculty. All clinical faculty members, regardless of their departmental affiliation, serve as primary consultants to the medical students in their work-up of new patients. There is at present a limited attempt to restrict the scope of these consultations; for example, members of the department of obstetrics see only female patients. The emphasis in this primary consultation is not on disease but on the approach to a clinical problem. If necessary, a secondary consultant in the specialty required by the nature of the patient's problem will participate. Because the great majority of patients coming to the clinic have problems referable to internal medicine and psychiatry, the extensive use of members of these departments as primary consultants diminishes to some extent the necessity for secondary consultation.

The participation in the general clinic by all clinical faculty members is consistent with the current policy that every faculty member should spend some time each year teaching in a department other than his own. The purpose is to emphasize areas common to all the medical sciences.

Physical facilities

The buildings of the health center were designed to carry out the basic educational philosophy. The goal in their design was to provide optimal facilities for the implementation of the student-centered concept of the curriculum, and the patient-centered concept of medical care. The fostering of interdepartmental cooperation by the provision of easy communication from one functional area to another was an additional important consideration. The two basic structures, closely connected at all levels, are the six-floor medical science building and the nine-story teaching hospital. Included in the medical sciences building are the lecture rooms and student laboratories, study cubicles for first- and second-year students, faculty offices, research laboratories, administrative offices, the medical library, and auditorium. The hospital contains eight floors of inpatient facilities (capacity 400 beds) with supporting services, outpatient clinic area, ambulatory patient wing, and study cubicles for third- and fourth-year medical students.

Certain features of the physical plant are worthy of special mention because they relate specifically to the objectives of the school. The centrally located library and auditorium are easily accessible from all portions of the medical center. A typical floor in the medical sciences building contains office and research laboratories for clinical and basic science departments. Whenever possible departments with related interests are located on the same floor; for example, anatomy-orthopedics-neurosurgery-urology, biochemistry-pediatrics-obstetrics-psychiatry, microbiology-medicine-neurology, pathology-surgical-medical illustration. The teaching laboratories have been designed so they may be used for a variety of purposes. Each laboratory can be divided into four sections so that the maximum class size of 64 can be subdivided as necessary into small groups for discussion, demonstrations, or special projects.

In keeping with the desire to stimulate students to acquire the habit of continuing self-education, it was thought important to provide special private study cubicles within the medical school environment to foster such activities. On the first floor of the medical sciences building are study cubicles for the first- and second-year students. These unique areas provide for each student a desk with adjoining locker where he may, in relative privacy, read, reflect, write, or do independent microscopic work. The cubicles for the third- and fourth-year students are centrally located in a wing of the hospital.

The teaching hospital is arranged to provide a maximum amount of efficiency in patient care and minimum of noise and traffic in patient areas. On each ward, in addition to the usual facilities, there is a large, well-equipped laboratory for the use of the students and house staff. The laboratory and the teaching-examining room, which also serves as a treatment room, communicate directly with the house officers' desk and the charting station so that the care of critically ill patients or the work-up of new patients can be carried out without the need to use the main corridor.

A patient-education suite provides a pleasant private environment for interviewing or giving special predischarge instructions to patients.

The outpatient clinic is attractively designed to provide an efficient flow of traffic from registration desk to consultation, examination, or laboratory areas. The examination rooms are provided with a small desk and a lounge or comfortable chair directly facing it; the examining table is separated from this history-taking area by a drape. The student is thus required to face his patients directly, and the patients do not view the examining table during the history. When the history is completed, the patient retires behind the curtain to prepare himself for the examination, while the student may use the desk to finish writing his history.

Adjacent to the clinics is an ambulatory patient wing with hotel-type rooms, for patients who require no nursing care, but who may need to stay near the hospital for convalescence or for diagnostic studies.

Discussion

No definitive judgments can be made on a medical school which graduated its first class less than two years ago, and which is still in the process of acquiring its basic faculty. The most striking feature of the school is the fact that the program has been planned meticulously with direct concern for the basic educational philosophy. There may of course be differences of opinion with respect to the curricular emphasis, the policies of clinical teaching, or the stress on the behavioral sciences. However, it is striking to see the consistency and logic with which the objectives and policies have been translated into curricula and even buildings.

The emphasis on understanding the patient as the focal point of the medical educational experience is clearly expressed in many features of the curriculum—such as the Introduction to Medicine course in the first year, the extensive psychiatric interviewing experience during the second year, the basic clerkship in the third year, and the general outpatient clinic in the fourth year.

The general clinic, at present directed by the professor of medicine, will ultimately have a director with department-head status, not only to facilitate administration, but also to emphasize the clinic's nondepartmental organization. At present, while the clinical department heads strongly support the concept, many faculty members in specialty areas feel uneasy and inadequately trained to approach the wide variety of clinical problems with intelligence and skill. After a few years have passed, it will be possible to determine just how successful this approach will be. If the use of secondary consultants becomes too extensive, one of the major goals of the clinic may become vitiated; on the other hand, unless such consultants are actively used, one of the major assets of the health center will not be utilized, that is, the application of the faculty's specialized knowledge and skill to the solution of clinical problems.

At present the patients receive all the specialized care they require, but as the referrals increase, the general clinic may become impractical in its

present form. The difficulty arises in attempting to teach medical students in an environment that differs considerably from that with which most clinical instructors are familiar. If this experiment succeeds, it will be largely the result of educating the faculty to become skilled not only in their special fields, but also in general ambulatory medicine and office psychiatry.

The basic clerkship appears to be well conceived, and in spite of the fact that it is a new experience for most of the faculty, is working successfully. The timing of this clerkship to follow immediately on the close of the second year, and precede the summer vacation period, is of interest. The purpose is to provide the inexperienced students their initial contact with patients at a time when the experienced house staff is available to offer a maximum amount of assistance. Since the other clerkships do not begin until after the basic clerkship has ended, the clinical faculty can also give their full attention to the needs of each group of students as they begin their new responsibilities.

The appointment of a faculty advisor for each class as it begins clinical study has facilitated the operation of the clinical teaching program, particularly the fourth-year electives.

The emphasis in each year on problem-solving and scientific thinking is quite impressive. Only many years hence can it be known to what extent these experiences actually achieved their goals. National Board Examinations are taken by all students so the faculty may confirm the acquisition of at least a minimum coverage of factual material.

Little need be said concerning the physical plant save that it is an excellent example of what can be done with a combination of clear understanding of goals and meticulous attention to details of design. The most notable contribution is the individual study cubicle to provide the medical students an area within the medical center but outside the laboratory in which each can work independently. Because of the need to allow privacy and at the same time to conserve space, the arrangement appears to visitors a trifle cramped; students, however, appear to find it very workable and put the cubicles to good use. The goal of encouraging student initiative and independent work is certainly fostered by the cubicles. The flexibility of the teaching laboratories and the careful arrangement of geographic relationships so as to facilitate communication among departments and between students and faculty have been mentioned above.

The patient-education areas on the wards were designed in recognition of the fact that most patient care actually takes place in the home and that doctors-in-training should learn to orient their hospitalized patients to the problems they must face when they are discharged. There is nothing truly unique in the clinic examination rooms, but the careful attempt to provide comfortable and attractive surroundings for history-taking reflects a clear concern for the comfort of the patient and for the importance of establishing rapport between doctor and patient.

The ambulant patient wing, while well conceived, has been slow in reaching full utilization. It will prove its value only when faculty, house

staff, and patients become accustomed to its use. Such intermediate areas between hospitalization and home care have been utilized in various ways for some time; it should prove valuable for a medical school to explore the most effective ways in which this type of facility can be used to provide economical and efficient patient care.

The full flowering of the integrated, university-oriented program in the health sciences will take many years. At present, the four schools in the health center are still feeling their way, and appear appropriately more concerned with their own individual development than with the establishment of new avenues of interdisciplinary cooperation. Close collaboration does exist in some areas, the most notable example being the relationship of the faculties of the schools of medicine and of nursing. The nurses serve as consultants in patient care rather than merely as assistants to the medical staff; the nursing students are being trained for such roles. The faculty of the College of Nursing have hospital staff positions comparable to those of their counterparts in the College of Medicine. The College of Nursing believes that the primary role of the nurse is in patient care, not in supervising details of hospital administration; nurses have been completely freed from the non-patient-care activities ordinarily associated with duties of head nurses or nursing supervisors. A representative of the hospital administration (the unit manager) on each ward supervises such administrative matters as housekeeping, personnel, laundry, food, supplies, telephone calls, admissions and discharges, insurance forms, and other problems. The nursing staff devotes full attention to actual bedside care of patients. The teaching orientation is toward understanding the needs of patients and learning to communicate with patients. Investigators in the College of Nursing and the College of Medicine are studying the impact of this type of nursing care on patients.

The College of Pharmacy and the College of Health Related Services, are in a somewhat different situation. Pharmacy was in existence before the medical school was established, and is just now moving into a new wing of the medical sciences building. The College of Health Related Services (medical social service, occupational therapy, physical therapy, etc.) does not yet appear to have as direct an impact or as close an association with the College of Medicine as is the case with the College of Nursing. The principle that the members of the health team who are going to work together should learn together is actually implemented only in very general terms; so far there has been little attempt to integrate the educational experiences of the students in the various schools.

It is of interest that the orientation of the program in medicine is toward educating family physicians.[1] It is evident from an inspection of the program however, that the term *family physician* does not imply the rural general practitioner. The technical details of the role of the new family physician are not yet clear, but the medical school phase of his training at the University of Florida assumes a very clear orientation toward his

[1] For some views on the family physician of the future, see Chapters 4 and 5.

responsibilities to patients. The basic assumption is that his primary purposes are to understand human behavior and the problems of patients, to know how to communicate effectively with patients, to be able to deal with other members of the medical care team, to think logically, and to apply the scientific method to medical problems. If, in the four years of medical school this can be attained, the Florida program will have been uniquely successful.

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CHAPTER 4

One Educational Proposal and a Critique

A. Physicians for Americans: Two Medical Curricula

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There is considerable documentation on the inadequate numbers of different kinds of physicians providing medical care for the people of the United States. Increasing the number of well-prepared general physicians can be set forth as one goal in this dilemma, and a two-curricula system in the medical schools may be one means of achieving this. The intent of the proposal is to: strengthen our medical research program, improve the quality of our medical specialists, meet our medical care needs through proper distribution of different kinds of physicians.

THERE IS ONE basic assumption underlying this presentation—that the medical schools of the United States have as a prime responsibility the education of a sufficient number of the different kinds of physicians needed to provide adequate medical care for the people of our country.

If this assumption be accepted, it can easily be demonstrated that the medical schools in 1960 are not meeting this responsibility and that they face a grave problem which must be solved. The facts documenting the existence of this problem are well known to the members of this Institute from many recent studies.[1] They will be summarized briefly here.

THE PROBLEM

The number of physicians now practicing in the United States and those to be graduated during the next decade do not and cannot meet the needs of our growing and changing population if demands for med-

[1] Weiskotten, H. G. and Altenderfer, M. "Trends in Medical Practice," *J.Med.Educ.* 31, July 1956, Part 2; *Physicians for a Growing America*, Report of the Surgeon General's Consultant Group on Medical Education, Frank Bane, Chairman. PHS Pub. 709 (Washington: U. S. Government Printing Office, 1959); *Federal Support of Medical Research*, Report of the Committee of Consultants on Medical Research, Boisfeuillet Jones, Chairman. (Washington: U. S. Government Printing Office, 1960).

ical service continue at the present level. At a rate of five physician's visits per person per year, a population estimate of over 200 million by 1975, and the medical school expansion program now projected, it will be impossible to maintain the present physician-patient ratio of one to 750. With an increasing proportion of very young and very old people in our population, and with most general physicians overworked at the present time, it would appear reasonable to try to maintain this ratio.

The growing deficiency is greater among those physicians providing general medical services—i.e., general practitioners, internists, and pediatricians. The drop in the general physician-patient ratio from one per 1100 to one per 1700 people in the United States from 1931 to 1957 was abrupt and is continuing.[2] This trend toward the disappearance of the general physician is nationwide. It is shown by the complete lack of the physician's services in some rural areas and the shift toward specialty practice in urban areas.

It has been suggested many times that the internist will be the general physician of the future. But, with our present medical education program, the number of internists providing personal health services cannot now nor in the foreseeable future meet the need. There is less than one internist for every 14,000 people in the United States.[3] Many of these internists are in a subspecialty or in full-time positions in industry, the medical schools, or in veterans hospitals. Internists are rare in rural areas and over one-quarter of them practice in the two states of New York and California. Assuming that they were evenly distributed throughout the country, that they were all in general practice, and that pediatricians would continue to be educated at the present rate, it is estimated that by 1975, if general practitioners continue to disappear at the 1931-57 rate, we will need six times as many internists as are now in practice in the United States to regain the general physician-patient ratio of the early thirties (one per 1100 of the population).

When a patient has no general physician, lack of continuity in his medical care is inevitable. His health will not be properly supervised and gaps will occur in his care when he is ill. Moreover, he is often confused by conflicting information given to him as he goes from specialist to specialist or is referred from one service to another in our highly compartmentalized hospitals.

A whole host of ancillary medical personnel has been created to perform tasks once considered to be in the province of the general physician. These include public health nurses, medical social workers, nutritionists, occupational and physical therapists, clinical psychologists, and vocational rehabilitators. The paramedical professions make great contributions to medical care, but their very creation and existence have increased the need for a general physician to select wisely and coordinate their services for the benefit of the patient.

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[2] *Physicians for a Growing America, op. cit.*, p. 84.

[3] Author estimate.

The inadequate number of physicians graduating from our medical schools has forced us to turn to graduates of medical schools in foreign countries to fill about one-quarter of our internships and residencies (8,400 of 35,000). Indeed, there are more foreign physicians in our hospitals than graduate each year from all medical schools in the United States. Most of these foreign graduates come from the Philippines, Turkey, Mexico, Iran, Korea, Greece, Japan, and India—countries whose medical standards are not comparable to our own.[4] Actually in 1959, there were over 2,500 Philippine interns and residents in our hospitals, an average of about 500 from each of the five proprietary medical schools in that country.[5] One might wonder whether physicians coming from these countries are on the average more capable than the students who flunk out of our medical schools. Examinations of the Educational Council for Foreign Medical Graduates will eliminate the more incompetent of these, but the need for interns and residents will then become greater.

As a result of the inadequate number of physicians graduating from American medical schools, an increasing proportion of foreign interns and residents is being licensed to practice in this country. Those licensed have increased from 458 in 1951 to 1,316 in 1958.[6] In other words, about one out of every six doctors, newly licensed in the United States in 1958, was graduated from a foreign medical school. Many of these foreign physicians go into general practice.

In effect, we discourage American students from obtaining a medical education leading to general practice. To take their places, we encourage graduates of low-grade foreign medical schools whose standards resemble the pre-Flexner schools in the United States.[7] This brings us face to face with the question: Should the United States of America continue to depend on countries with relatively low medical standards to man our hospitals and to provide us with a significant proportion of our general physicians? These relatively undeveloped countries can ill afford to supply physicians to us. Indeed, if we were fulfilling our international responsibilities, we should produce a surplus of doctors beyond our needs to send to underdeveloped countries—as the Russians are already doing.

It is clear why graduates of American medical schools tend not to

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[4] This educational experience could be beneficial to the foreign physicians. But positions in the better teaching hospitals are preempted by our own medical graduates. For the most part, the foreign intern or resident accepts appointments in nonteaching hospitals where there is relatively little formal instruction or supervision. As an educational experience it leaves much to be desired. We should establish a planned postgraduate educational program for the graduates of low-grade foreign medical schools.

[5] Personal communication with Dr. Benjamin Barrera, dean and professor of pathology, University of the Philippines College of Medicine. This one nonproprietary medical school graduates only about 100 students per year, but few of these come to the United States.

[6] *Physicians for a Growing America, op. cit.*, p. 3.

[7] In 1910, Abraham Flexner's report, *Medical Education in the United States and Canada*, was published as Bulletin No. 4 by the Carnegie Foundation.

go into general practice. Since, the Flexner Report, the medical schools have pursued a policy which favors the education of experts, i.e., scientists and specialists rather than general physicians. This policy was aided and abetted by:

1. The high priority given by medical school admission committees to applicants with demonstrated scientific ability.
2. A medical school curriculum concentrating on minutiae of preclinical science sometimes at the expense of clinical teaching.
3. The preferential appointment by our great teaching hospitals of interns and residents with scientific ability rather than those with clinical acumen.
4. The appointment of scientists interested in research in one of the preclinical sciences instead of clinicians as heads of clinical departments.
5. The availability of large sums for medical research with a concomitant lack of financial support for medical education.
6. The development of the specialty boards.
7. And last but not least, the patient's immediate acceptance of and willingness to pay for the services of the specialist.

The policy of producing highly qualified scientists and specialists must continue. It has been responsible for the flowering and the excellent reputation of American medicine. We must be sure that the highly specialized research programs of our medical schools be stimulated and expanded if we are to remain in the vanguard of those contributing to medical advance. Students now being educated in ever-narrowing fields will not only contribute to research — they will also use their highly specialized knowledge and techniques for the patient's benefit.

But, at the same time, this policy has created new and serious gaps in general medical care. The educational needs of the specialist and scientist on the one hand and general physicians on the other grow farther and farther apart and it is increasingly difficult to include them within the compass of the medical curriculum. The low-ranking student who cannot make the grade in our research-oriented curriculum drifts off into general practice. This raises a most serious question. How can the medical schools continue to provide top medical scientists and at the same time graduate competent physicians in numbers adequate to meet our medical care needs?

When we examine the situation closely, we realize that the compromise reached by our present medical curriculum does an injustice both to the education of the expert and to that of the general physician. As has been pointed out in the studies of Dr. Helen Hofer Gee,[8] the medical body is a heterogeneous group both in ability and motivation. In

[8] Gee, Helen Hofer, "Differential Characteristics of Student Bodies: Implications for the Study of Medical Education," in *Selection and Educational Differentiation* (Berkeley, California: Field Service Center and Center for the Study of Higher Education, University of California, 1960), pp. 125-54.

our attempts to reach this broad spectrum of students, we have been forced to teach the expert at too elementary a level while presenting an overspecialized curriculum to the future general physician. For example, our biochemists have complained that so much time is spent teaching the alphabet of the science (i.e., definitions such as that of hydrogen ion concentration) to students with a minimal chemical background that relatively little time remains for the teaching of biochemical theory.

In our teaching of biostatistics in preventive medicine at the Harvard Medical School, we face a spectrum of students stretching from advanced mathematicians to those who have barely learned the principles of elementary algebra. We have had to give preliminary instruction to this latter group before beginning the regular course. But, even so, the advanced students are never really challenged. These compromises will continue to impair the future of medical science and of medical care in the United States as long as we depend upon a single medical curriculum to do both jobs.

THE PROPOSAL

A possible way out of this impasse is to follow the lead of schools of technology such as Massachusetts Institute of Technology. They have recognized that the educational needs of the physicist and the engineer are different. Although students entering these fields may start off together, their curricula diverge. This is not to say that a student selecting one of these may not change to the other if he so decides and if his qualifications permit. Students with a special interest may also select elective courses in the other curriculum.

In medicine a similar program is possible. Two curricula can be designed—one for research workers, specialists, and future professors, and the other for general physicians. For purposes of discussion and debate, I will give examples of the curricular changes that illustrate the principles which might be followed if a two-curricula system were adopted.

The research specialist curriculum must include more instruction in the newer preclinical sciences and in mathematics. For example, recent developments in physics, electrical engineering, and mathematics open new pathways to important medical knowledge not accessible to conventional research methods. At the present time, most clinical research tends to be limited to the study of first-order reactions, i.e., one-to-one relationships. Now, application of mathematical theory makes it possible to interpret complex interrelated systems, such as that of the absorption of fats from the intestine where splitting and recombination of compounds and recirculation take place simultaneously. Or, through multivariant analysis, it is now possible to study the function of a complex organ such as the kidney. Also, newer mathematical models of physiological functions, such as that of muscular contraction, now provide better hypotheses for the inductive scientist to test in his experiments. In bio-

chemical research, mathematical analysis of randomly split peptide fragments now make possible the determination of the order of amino acids in a protein, thus shortcutting the painfully slow process of splitting each linkage with a specific enzyme.

Such newer knowledge will also assist the specialist in his care of patients. For example, analysis of electronic records, as has been demonstrated by Pipberger for the electrocardiogram, gives promise of relieving cardiologists of the routine reading and the interpretation of tracings. These newer developments in medical research and in specialty practice have been abetted by the continuing development of computation systems and the increasing availability of such equipment.

Therefore, the curriculum for the student looking toward a career in medical research or in specialty practice must include enough mathematics, physics, and electrical engineering to enable him to work effectively in research teams on which Ph.D. scientists in these fields will be represented. This is similar to the present need of the clinical investigator for a basic knowledge of biochemistry. Depending upon individual interests, students will have to learn enough mathematics to handle problems concerned with probability theory, must master differential and integral calculus (and in many cases differential equations), and must acquire enough electrical engineering to use this growing technology in the design of experiments and enough understanding of physics to incorporate current theory in the study of such phenomena as perception.

Time for such study can be made available by shortening of the clinical teaching in specialties not in the field of the student's interest, permitting many more elective courses, and, if necessary, lengthening of the curriculum in particular fields. Thus, a student looking forward to a future in research on perception may spend more time in ophthalmology and less in genito-urinary diseases while one interested in the research on the physiology of the kidney might reverse his selections. Certainly, education of the general physician in a different curriculum will add flexibility to the curriculum of the clinical research worker and the specialist.

The curriculum for the general physician should be shorter than the present one. Condensed medical curricula compressing college and medical school instruction in a six-year course have been proposed by Johns Hopkins University, Northwestern University, and Boston University.[9] It is difficult to see how such a single condensed curriculum can be satisfactory both for the scientist and the general physician when the present longer one is not. But, such a condensed curriculum would lend itself to the education of the general physician at about the level of our present internist. With such a shortened curriculum many more doctors could be educated than under the present system. This assumes, of course, that there would also be a curriculum for the education of the scientist and the specialist.

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[9] See Chapter 3, pages 50-72, for a discussion of some of these programs and their objectives.

The key to the new curriculum for the general physician is selectivity of those scientific facts and theories germane to his particular task. That task consists of the general supervision of health and medical care, including preventive medicine, the treatment of minor illnesses, the practice of minor surgery and perhaps of normal obstetrics, and the screening of patients for early manifestations of severe or chronic illness in which early treatment gives a better prognosis or a more comfortable life.

Much time in the present curriculum is devoted to learning an almost infinite number of details, many of which are not needed by the general physician. For example, during my medical school education, I was expected to learn the origin and insertion of all of the striated muscles of the body. This was the era of the anatomist—gross, microscopic, or morbid. When his influence declined with the rise of biochemistry, this anatomical requirement was deleted from the medical curriculum. But instead, students are expected to learn in the same unselective way the names and functions of all the enzymes in all the known chemical reactions in the muscles of the body. To be sure, knowledge of the principles of enzyme action and of the Krebs cycle is important and should be taught to the general physician. But the details of the individual chemical reactions, of great interest to the biochemist and the expert in metabolism, do not concern him.

Just as research has become more complex, so has medical care. The evolution of the specialist in medicine, the increasing use of clinical and other laboratories, and the many paramedical assistants all demand a general physician who knows how to interrelate all of these essential services for the benefit of a particular patient. Moreover, the increasing burden of chronic disease associated with lengthening life expectancy demands more detailed supervision of the individual patient. This is so whether the patient is cared for by the specialist services of the hospital or at home with the assistance of community health services. The curriculum of the general physician, therefore, must include time for learning the detailed supervision of, for example, the ambulatory cancer patient whose treatment may require at particular times a surgeon, a radiologist or radiotherapist, a specialist in metabolism, an anesthesiologist to control his pain, a psychiatrist, and selected laboratory tests, as well as the services of a public health nurse, a medical social worker, a dietician, and a physiotherapist.

Most important of all, the general physician must have received special teaching on the theory and technique of screening patients for early manifestations of those serious or chronic illnesses which are better treated early. Under his general supervision, he must be able to refer patients so identified to proper treatment, even though it may require a particular specialist, an unusual laboratory test, or a service to be given by a member of one of the paramedical professions. This means that the clinical competence of the general physician must be excellent. The curriculum must stress clinical instruction particularly on patients in the early stages of illness.

These, then, are representative examples of the kind of curricular changes that would be possible if the two-curricula system were adopted. Those in medical education should be able to visualize the changes that would improve their teaching programs if the additional flexibility of a two-curricula system were made available.

If a two-curricula system were adopted, one particular advantage would be that the medical schools could have a more selective admission policy. Candidates for admission to the research-specialist curriculum would be expected to have different qualifications from those applying for the general physician curriculum. The former should attract the kind of student who has been turning away from medicine toward a career in mathematics or in such sciences as physics and chemistry.

In contrast, the general physician's curriculum should attract some of those dedicated and able students who have hesitated to apply or have been frightened away from medical school because of their inability to compete at an advanced level with those more gifted in the sciences. It would be a great novelty to see the top man in a medical school class yearning to be the best physician rather than the best scientist.

As is well known to the audience of the 1960 Teaching Institute, increased recruitment will have to be supported by extension to medicine of such scholarship aid programs as the predoctoral fellowship programs of the federal government. Large sums for building and the operation of medical schools will also be needed. It should be pointed out, however, that there is no reason why this particular plan should cost more than other plans for expansion of medical schools. Indeed, by shortening the curriculum for education of general physicians, it should cost less.

Recruitment of faculty for this proposed program should be less difficult than recruitment for a mere expansion of the present medical schools. As in the latter case, more scientists will have to be recruited for preclinical teaching. However, for clinical teaching, an unused resource could be tapped. Many skillful young clinicians in our teaching hospitals now have no academic future because they are not adept at laboratory research. Many are now forced unwillingly into private practice. They would make excellent full-time clinical professors, many of whom will be needed if we develop a curriculum directed toward the education of the general physician.

One point must be clear. My suggestion for reorganizing medical education provides for two curricula in the same medical school and not for different curricula in separate schools. This latter system, which I oppose, would have two major defects. It would educate medical scientists in an environment where there would be insufficient exposure to the problems of clinical medicine that demand thoroughgoing research. But, more important, it would result in vocational schools for general physicians. As in the case of the present education of the internist, the curriculum for the general physician must be soundly based on medical science in a

school where the student is in close contact not only with clinical teachers but also with research workers and specialists. To do otherwise would bring a rapid return of all of the evils of the pre-Flexner era.

This proposed reorganization, if adopted, would have to be followed by a rearrangement of the structure of our teaching hospitals. The graduates of the scientist-specialist curriculum would be given appropriate appointments on the specialized services of the teaching hospitals. After a year on the general medical or surgical services, they would begin to concentrate their time in a field of interest. In contrast, the general physician would be appointed to a rotating service with most time spent on the general medical service. Special arrangements for experience in minor surgery, normal obstetrics, and outpatient medicine would be made. Patients using the hospital almost exclusively for their medical care in the emergency service, the outpatient department, and on the wards would be assigned to a general physician-in-training who would supervise the continuity of care.

When his period of formal education is completed, the general physician must continue in his practice to be closely related to the scientist and the specialist, and to the hospital. Individual physicians cannot practice good medicine when they are isolated from specialists and from hospitals. Whatever the system of education, group practice units comprising all of the specialties and using personal physicians specially educated for this responsible task could provide continuous health supervision and timely and appropriate medical care of a quality not generally available at the present time. Indeed, it is my considered opinion that such continuous association of general physician and specialists is much more important for the maintenance of high quality in the general practice of medicine than is the presence of esoteric minutiae of preclinical science in the curriculum of the medical student.

The medical schools must decide whether they will meet the responsibility of providing an adequate number of general physicians to meet the medical care needs of the American people. The situation is already critical with overworked internists and general practitioners unable to satisfy the urban need, with a complete lack of physician's services in many rural areas, and without enough medical graduates to fill internships and residencies even in hospitals with excellent postgraduate programs.

A two-curricula plan has been presented and could solve the problem. But, if the medical schools really decide to meet this responsibility, they also have other choices. Some educators believe that the present system would be adequate if properly implemented. In contrast, others believe that with our highly developed system of specialist medical care, and with the support of the many paramedical professions, personal health services can be delegated to specially educated public health nurses or to individuals educated in a modification of the Russian feldsher system. I do not share these views. I believe that the American people want personal health services from a physician educated specifically for this important professional responsibility.

In any case, medical educators must not let the issue be settled by default. It is not enough to point with pride to the excellent medical care provided within the ivory towers of our great teaching hospitals or to the relatively few excellent internists who leave such centers to go into practice. Such centers set a high standard for the care of our very sick hospitalized patients, but quantitatively they meet only a tiny part of the medical care needs of the American people. Much more important, as the gaps in medical care widen, they are being filled by relatively poorly educated foreign physicians and by such cultists as chiropractors and naturopaths. The problem is urgent, and the question raised is not whether we should adopt a two-curricula system but how our medical schools can best meet the challenge of providing personal health services to all Americans.

B. Health Personnel for Americans: Look Before We Leap

BY SAMUEL P. MARTIN

Professor of Medicine and Head of the Department
University of Florida College of Medicine

It is important that we study the public mandate and the public needs for health care before a marked revamping of medical education, such as that proposed by Dr. David D. Rutstein, is undertaken. The role and capability of health-related service personnel and nurses in the pattern of health care may modify any proposed alteration.

THREE MAJOR and pressing problems of medical education and practice have been posed by Dr. David D. Rutstein. He proposes an alteration in medical curriculum to meet these problems. In brief the three problems are as follows: first, the divergence of the number of medical practitioners and the population; second, the rapid development of specialization in medicine, with a loss to the ranks of the general or personal physician; and third, the flowering of basic sciences in medicine and a new need and demand to have men trained in the basic areas of mathematics and physics. To meet these problems, Dr. Rutstein has proposed the concept of two curricula in one school—one based firmly in the sciences and patterned on our present successful plan of graduate education in the university, and the second one based on a more technical aspect of medicine and patterned on our present applied science training.

His proposal is quite exciting and has many advantages. It is quick and it could be put into operation with a minimal change in our present system, where many schools are trying to accomplish both objectives in the

same curriculum. One must strongly admire the idea of freeing up the medical curriculum. Furthermore, no additional structure or alteration in the present structure of the hospital and the medical school are required. Teachers are readily available to accomplish this change, and students to fill this type of program are available. Another very important advantage is that the student can still shift from one program to the other with a minimum loss of time.

The problems posed and the solution proposed are not confined to medicine, but are raging controversies in many fields of scientific endeavor. In physics and engineering, two or three curricula exist. Criticism is directed toward the technical approach in engineering training because of the limiting effect on the scholar and, to meet this problem, schools are training physicists, engineering scholars, and engineering technicians. There is an increasing trend in industry to favor the man trained in physics and the engineering scholar for top positions, using the engineering technician for routine work. In this field, however, the technician has a much shorter training period than in the field of medicine.

The last 25 years have seen the practice of medicine move from an era of empiricism to an era based on science. There has been a change from trade school to graduate education. Clinical medical practice has shifted from an art based on hunches to a budding science. Bedside medicine is rapidly becoming the application of the scientific method of patient care, and we have seen a strong effort to bring the scientific approach to a patient-centered and community-centered attitude of practice.[1] One must maintain, nourish, and develop the scientific method as a basis for practice rather than empiricism.

Areas for social research

A strong plea can be made against sudden departure from our present course. A careful study of the problems should be made first, and our university colleagues in the social and behavioral sciences have developed methods for this study. With their help, we should explore three important components of the problem: first, the public mandate for health must be examined; second, the public needs must be determined; then last, a compromise between the mandate and the needs must be developed. We should avoid the subjective approach, with impressions ranging from the portrait of the queen's physician by Sir Luke Fields on the one hand, to a science fiction physician with strain gauges, electronic computers, and artificial organs on the other. Our approach to the present dilemma could and should give mankind one of its first opportunities to meet a social problem by scientific study. This would involve study of the patient-care program by techniques of the social scientist.

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[1] McGavran, E. G. "Scientific Diagnosis and Treatment of the Community as a Patient," *JAMA* 162, October 1956, pp. 723-7.

The first area noted for study above is the public mandate for health care, and at present there are more questions than answers. For one thing, there is evidence that the mandate is being extended from illness to health. Several questions arise with respect to the patient's desire for his personal physician or his willingness to place his care in the hands of an organized body of many health professions. Studies in this area are moving forward by Dr. Cecil G. Sheps and his group.[2] The recent phenomenal growth of group practice is an indication of this problem.

The area of public needs requires particularly careful analysis. As a starting point, it might be said that a significant part of the practice of medicine involves one of the following systems:[3] (a) symptomatic relief in the course of acute self-limited illnesses, for example, the treatment of common viral infections or minor injuries; (b) symptomatic relief in the course of chronic illnesses, for example, the regulation of diet, food care, routine chest x rays, and other practices going into the good care of a chronic illness such as diabetes; or (c) the routine examination and immunization. In this mass of work, the practitioner must sort out the patient who needs definitive medical care. Studies on chronic illness indicate a great backlog of undiagnosed and untreated chronic illness.

Closing the gap between the mandate and the needs involves study of the roles of the health professions. Little information is available in this area. We should know the attitudes of the public to an extension of the activities of nursing and health related professions, and we should consider the capability of these people to operate on a broader base. Rather than change the present trend in medical education, it might be better to increase the skills within the other health professions. The base for operation of the graduate nurse and nursing technician could be extended. Many functions in chronic care and routine health practices could be handled by these people. Recent studies on the role of the obstetrical nurse have shown one extension of these roles,[4] and this potential also exists with the clinical psychologist, the physical therapist, the occupational therapist, the public health nurse, and the medical technologist.

A plea for scientific action

I would like to make one plea, however, before we mount another horse and ride off in two directions. Let us find the problem. Let's not use our intuitive impressions. The social and behavioral scientists have methods, scientific methods, for study of our activities. These must be applied first.

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[2] Solon, J. A., Sheps, C. G., and Lee, S. S. "Delineating Patterns of Medical Care," *AJPH* 50, August 1960, pp. 1105-13. Also "A Hospital's Outpatients," *AJPH* 50, December 1960, pp. 1905-13.

[3] Standish, S., Bennett, B. M., White, K., and Powers, L. E. *Why Patients See Doctors* (Seattle, Washington: University of Washington Press, 1955).

[4] Eastman, N. J. "Problems in Evolution of Obstetrics," *JAMA* 171, October 1959, pp. 1292-5.

Let's study ourselves. What is our role? What is the potential role of health-related professions? Have we through our preconceived impressions perpetuated the minor Jehovah complex of the young physician and stifled the growth of the health professions to satisfy our ego?

After we have studied the factors that constitute good patient care and the potential of the various members of health teams, including the physician, we may find that solutions to the dilemmas involving the doctor-patient ratio, scientific growth, and specialization are already in our hands. We may save ourselves a dangerous and costly journey. It may be possible to upgrade other members of the health team and lessen our need for such rapidly increasing numbers of physicians. Scientific education for the physician may be further strengthened in a manner that will allow his continued growth after graduation. In this manner we may continue to narrow the gap that now exists between basic scientific discoveries and good clinical practice. The training of even the most competent technician is a poor substitute for the educated physician.

In closing this introduction to the discussion of Dr. Rutstein's paper, I want to emphasize my plea. Like our Alan Gregg Memorial lecturer, Dr. Joseph T. Wearn, I would plead for more intensive research on patient care before we start on a program to alter the training of the physician to solve an unknown problem.[5]

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[5] Wearn, Joseph T. "Immediate Problems for Medical Educators," *J. Med. Educ.* 36, February 1961, pp. 113-8.

CHAPTER 5

The Family Physician of the Future: Fact or Fiction?

BY WARD DARLEY

Executive Director
Association of American Medical Colleges

The availability of physicians for general care has been threatened by the growth of specialism. However, a new specialty of family practice, with its own body of knowledge and its own areas of research, may be an answer to the need for providing continuing, comprehensive care. A challenge can be presented to the leadership in medical education to develop effective programs.

THE AVAILABILITY and adequacy of continuing, comprehensive health and medical care for individuals and their families is, I believe, one of the most important questions facing the future of American medicine. There seems to be general agreement that this type of care is desirable and important and also that it should be based upon the services of a specially trained physician. But there is far from agreement as to the perimeters and depth of this physician's function and as to how he should be educated and trained. And in the meantime, largely due to this uncertainty, the pool of physicians which is supposed to shoulder the burden for continuing, comprehensive care is shrinking and the numbers and kinds of educational programs that might help the situation are not materializing.

Problems created by specialism

In considering the question of the physician personnel presently available for general medical care, the Surgeon General's Consultant Group in Medical Education counted the heads in three groups: the general practitioners, the internists, and the pediatricians.[1] The figures show that although the number of internists and pediatricians is slowly increasing, the number of general practitioners is rapidly declining. The net result is a decline in the total of the three groups.

[1] *Physicians for a Growing America*, Report of the Surgeon General's Consultant Group on Medical Education, Frank Bane, Chairman. PHS Pub. 709 (Washington: U. S. Government Printing Office, 1959).

Pediatricians are specialists interested in giving general care to the younger age group but small numbers sharply limit the total extent of their activity. Internists are specialists interested in the nonsurgical, general medical care of adults. Their numbers too are such that they can meet but a small segment of the total need, and in addition subspecialization is reducing both their interest and their potential for general care. The general practitioners, largest of the three groups, are not only falling off in number but are also yielding to the pressures of increasing medical knowledge and are developing specialty interests that are gradually reducing their availability for general care. Many, after several years of practice, actually enter specialty residencies with the view to certification.

In other words, specialism—the need to fragment the growing body of medical knowledge into learnable parts—is a potent factor in reducing the number and interests of physicians who can or will give time to the general care of patients. Furthermore, because of increasing demands upon physicians' time and energy, the patterns of medical practice are increasingly presenting barriers to the concept of general care by forcing all physicians, irrespective of their type or manner of practice, to limit their activity to the episodic care of definite illness, and therefore to avoid the entanglements that may come from indulging interest in the patients, families, or environments in which illness occurs.

Of the several sources of physicians who have been entering the field of general care, the most important has been a one-year, or less frequently a two-year, rotating internship. But the growing body of medical knowledge is rapidly outmoding this approach, and in response to this we now see an increasing number of hospitals, in addition to rotating internships, offering residencies in general practice, the most usual being a two-year program evenly distributed between general medicine and general surgery including obstetrics. But this internship-residency combination is having little impact upon the situation. For with increasing frequency medical graduates are going from the rotating internship into specialty training—in fact, there is a decided trend toward straight internships in certain of the specialties—and the residency programs in general practice are having constant difficulty with recruitment.

It is generally recognized that medical students most frequently base their choice of careers upon the practice and success patterns of their elders. In the main the patterns of practice and success that impress the students most are built around the phenomenon of specialism. Working upon the premise that the organization of clinical departments according to specialties has reinforced these impressions, many medical schools have developed special programs in which students have the opportunity to see and take part in the continuing, comprehensive care of patients (see Chapter 3, Section C). In these programs students are assigned to selected patients or families which they follow as a family physician for a period of several months to as long as a year. The hope has been that because of this experience, more students would be motivated to seek careers in this type of practice. Although such instances may have occurred, to date

there is no evidence that there is any such over-all result. The reasons are undoubtedly many, but one that cannot be ignored is that in these programs the students are still witnessing the performance of specialists—particularly pediatricians, internists, and psychiatrists—albeit they are coordinating their specialties into a high type of general care. And to this must be added the realization on the part of the student that, following graduation and the completion of the internship, opportunities to continue training in the environment of programs of continuing, comprehensive care are rare.

A postgraduate program for family physicians

In 1959, based upon the hard work of a committee representing the American Medical Association, the American Academy of General Practice, and the Association of American Medical Colleges, the House of Delegates of the American Medical Association approved a program which has the potential of providing a framework within which and from which the problems of recruitment and training physicians in the field of continuing, comprehensive care might be resolved.

The approved report of the committee specifically states that the program is intended to train physicians for the practice of general medicine of the future.[2] To this end, the report labels these physicians as "family physicians" and their area of competence as "family practice." Family practice is defined as "that aspect of medical care performed by the Doctor of Medicine who assumes comprehensive and continuing responsibility for the patient and his family regardless of age." Minimum duration of the program is two years, the first 18 months of which are to be an integrated, supervised experience in pediatrics, adult medicine, psychiatry, medical gynecology, and emergency medicine and surgery. These educational experiences are to be integrated around the continuing care of selected patients. The patients are to be seen where their best interests can be served—the clinic, the hospital, or the home. The relationships of the trainees to the other specialties are to be those that should pertain in actual practice—consultation and referral with the family physician maintaining active contact so as to take over when the episode involving the specialist is over. The final six months of the two-year program is to be reserved for those who may desire training in obstetrics or additional time in general medicine or one of its subspecialties.

Physicians are eligible to enter the program immediately upon graduation from medical school—hence, it is called a program rather than an internship or residency. It is believed that the completed program will be accepted in place of the rotating internship by both state and specialty boards. And in addition, it is hoped that some of the specialty boards,

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[2] Committee Report, "Preparation for General Practice," *JAMA* 170, June 1959, pp. 681-4.

particularly the Board of Internal Medicine, will accept the program as the year of the assistant residency. If this can be done, by adding two more years the trainee can reach for the status of a certified internist within the limits of present time schedules and at the same time be superbly trained for family practice. Or he can step out at the end of his first two years and still be well trained for a nonsurgical type of family practice.

Admittedly this program is new and must still prove itelf. Publicity has been slow in getting under way. It is too early to assess the eventual degree of interest of either medical schools, hospitals, or graduates. Since its approval in 1959, five programs offering eighteen positions have been approved.

On reading the report, it will be noted that except for its emergency aspects surgery is not to be offered as part of the training for family physicians of the future. Also if obstetrics is given, it is to be upon an elective basis. Hereby hangs a controversy that is causing considerable disunity among those interests that are concerned with the cause of continuing, comprehensive care.

Briefly, this controversy is between those who adhere to the concept of the general practitioner as a physician who provides general surgical and obstetrical, as well as general medical service, to all patients of all ages and those who hold that the future scope of medicine will be such that competence in both general medicine and general surgery will no longer be practical. Those who hold this latter view contend that since the development of new educational programs and the significant output of finished trainees will take years, the educational goals for future family physicians should not be compromised by practice patterns that may have been adequate to the past or that may seem adequate to the present.

Family practice: a new specialty

I believe that we must accept the fact that the knowledge important to medicine is going to increase at an ever-accelerating pace and that specialism is going to increase at the same time. I think we must also accept as fact that, as medical knowledge continues to grow, we can no longer produce physicians who can effectively carry on according to the present concepts of general practice. And yet, as both medical knowledge and specialism increase, I believe that the need for a special kind of generalist who will need a special kind of training will more and more emerge. Therefore, instead of attempting to resolve the problems of continuing, comprehensive care in terms of today, I believe we should look ahead in the light of present trends and try to anticipate what the capacities and patterns of medical service will be or ought to be, say 20 years from now. It is the men and women we are educating today or will educate during the next decade who will be carrying the burden by then, and I believe that the opportunities for advanced education in continuing, comprehensive care being offered today all fall short of meeting tomorrow's needs.

What do I mean when I say that the future will call for a special kind of generalist? He can best be described in terms of his function. In general he should serve as the health counselor throughout the entire life span of any given individual. This means that he should supervise the care of infants, adolescents, mature adults, and old people. He must be an astute diagnostician, particularly if he is to recognize and control intelligently the significant beginnings of disease. The management of chronic illness and its rehabilitation will be among his most important activities. His function will be to maintain and promote health as well as to prevent or combat disease. There is a very impressive body of knowledge that is now accumulating in the area of health management and disease prevention. An important part of this comes from the field of mental health and psychosomatic medicine. Therefore, this physician must be well trained in mental hygiene and clinical psychiatry. He can thus make deliberate use of the patient-physician relationship in the evaluation and management of his patients' problems.

This physician's training in the medical, surgical, and obstetrical specialties should only go far enough to give him an understanding of their diagnostic and therapeutic concepts. With modern communications and transportation developing as they are, and with our population becoming more concentrated, the need for any physician to practice in isolation without quick and easy access to fellow specialists is almost over, or certainly will be 20 years from now. Thus, this physician's training should be such that he will know when his patients need service from fields other than his own—he should continue to follow the patient through the period of specialist care so that he can interpret this phase of care to the patient and his family and also so that he can continue his supervision when this service is no longer needed.

One of the fundamental responsibilities of this physician will be to guide his patients through the growing complexities of medical care. In all probability the bulk of his activity will involve the ambulatory patient. Therefore, the main center of his activities will be his office. But from this office, according to the best interests of his patients, he will extend his services into the hospital or into the home and the community. He will be keenly aware of the importance of utilizing those community resources having something to offer in the management of his patients, and because of his firsthand knowledge of the home and the community, he should be in a position to help his patients adjust to environmental factors that may be of importance in their health problems. These family physicians could well be the keystone of medical care no matter what the future patterns of medical practice may be.

In essence then, I am proposing a new specialty: one that can be defined in positive terms, one that will depend upon the organization and application of a special body of knowledge, one that will require special training, and one that will fill a need that no other specialty will satisfy.

Until such time as sufficient numbers of trained family physicians can supply the needs for teachers and investigators, these training programs

will require the joint cooperation of teachers and investigators from the fields of pediatrics, internal medicine, nonsurgical general practice, psychiatry, preventive medicine, and rehabilitation. But the sooner students can work with physicians completely prepared to teach continuing, comprehensive care, the better. The new two-year program that I have just outlined may represent a good start, but I believe that ultimately adequate training for the specialty of family practice will be a postgraduate experience that cannot be obtained in less than three or even four years.

Areas for family practice research

In addition to the identification of a pertinent body of knowledge, one thing that has always characterized the birth of a specialty has been the development of research that advances its academic and practice effectiveness. I believe that family practice can easily develop this aspect of specialty status. There are many areas of research that would naturally apply.

Laboratory and bedside research have given us much knowledge that can be applied to the evaluation and management of health and the prevention of disease, but we still have gaps because of lack of knowledge regarding the general biology of the human being. The need for the intensive study of all aspects of the development of human beings from birth to death is very great. There is little of this going on, partly because of lack of finances and also because of lack of sponsorship. While such research, like so much other research now under way in medicine, would require the coordination of many disciplines, its sponsorship by a specialty area concerned with continuing, comprehensive care to me seems reasonable.

A very important part of this research should be concerned with a better understanding of the factors that influence human behavior, particularly those factors that could make the physician-patient relationship and the art of medicine more productive. We do not even have meaningful definitions of the terms "patient-physician relationship" or the "art of medicine." There are undoubtedly good discussions of these concepts in the literature, but knowledge that may be buried therein has yet to be brought together and coordinated with the view of its practical and deliberate application in the field of medicine. In any study of the physician-patient relationship it is important that the results of its misuse as well as of its use be given adequate consideration. In my opinion what doctors may say and not say and what they may do and not do constitute one of today's most important factors in the cause and aggravation of illness.

Another area of family practice research could deal with the definition of the professional and personnel components of adequate medical care. Much has been written about the make-up of adequate medical care, particularly about the need for enough facilities and personnel and for

economical and efficient means of delivering diagnostic and therapeutic service. But little consideration has been given to the place among these components of the part that should be played by the concept of continuing, comprehensive care and the functions and balances of the personnel that will be needed to go with it. We hear much about the importance of the medical team, but the research and experimental programs essential to developing the potential inherent in the concept are few and far between.

And finally, a specialty concerned with family practice would be a logical focal point for research aimed at evaluating the over-all effectiveness of medical care, particularly the role played by the individual physician. The study of the professional effectiveness of the individual physician is an area which, except for the well-known work of Osler Peterson and his group, has barely been touched.[3]

Conclusions

In conclusion I would summarize by saying that as this nation stands upon the threshold of increasing its medical manpower, the role that the concept of continuing, comprehensive care is to play as a component of adequate medical care must be decided. And if this concept is to be of importance, our programs in medical education will need considerable readjustment. This readjustment will need to extend across and coordinate all levels of formal medical education—undergraduate, intern, and residency. Since medical schools are the only institutions that are involved in all of these levels of education, I submit that it is their responsibility to undertake leadership in this important task. This is an area that should appeal to new medical schools, particularly those that might elect to direct all of their clinical resources to the study and trial of more efficient and effective methods of delivering total medical care.

I believe the educational experiences that can bring the concepts of continuing, comprehensive care into practice should be a part of the education of all physicians. I believe that the same should be said for the methods and concepts of scientific research. Nothing should be done to draw these concepts apart. To do otherwise would cut away too much of the common ground upon which all physicians and medical scientists should stand.

I finally believe that since specialism is here to stay, we must force it to fill our needs. One of the elements of this will be a medical profession with the knowledge, understandings, and concepts that will permit a common language and, at the same time, maintain an equality of status that can only come from the contribution of special services that will meet special needs.

My chief concern for the future of continuing, comprehensive care is the

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[3] Peterson, O. L., Andrews, L. P., Spain, R. S., and Greenberg, B. G., "An Analytical Study of North Carolina General Practice, 1953-54," *J. Med. Educ.* 31, December 1956, Part 2.

fear that in practical terms the availability of such care is steadily diminishing and that the development of the educational programs and of the personnel necessary to reverse this trend are steadily falling behind. In the meantime I fear that because the public may gradually be adjusting itself to these shortcomings, the need and the demand for continuing, comprehensive care are moving farther and farther apart. It is concern for bridging the gap between this need and demand that I feel should compel the attention of our leadership in medical education. The prompt acceptance to this challenge could well be the next most important step in medical progress. What purpose can new medical knowledge serve unless the proper education of our physicians can translate it into effective medical care?

CHAPTER 6

The Responsibility of Medical Education for Initiating Change

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The main problems with which medicine will be confronted in future are prenatal mortality, mental illness and defect, and disease and disability associated with aging. It is against this background that we must view the failure of the traditional services to provide a satisfactory standard of care for the mentally ill and chronic sick.

Although it would be wrong to attribute this failure wholly to medical education, a solution will require fundamental changes in the pattern of practice which must be initiated and sustained from teaching centres. It is suggested that, without prejudice to their traditional interests, teaching hospitals should accept responsibility for all services for a defined area. This would provide a laboratory within which it would be possible to explore new patterns of practice, to demonstrate to students the best arrangements consistent with contemporary knowledge and resources, and to promote important subjects and methods of research which have hitherto been neglected.

THIS PAPER might be subtitled "Medical Care Deficiencies Attributable to Medical Education." Implicit herein are two assumptions: that the contemporary standard of medical care is deficient, and that to a significant degree the deficiencies are attributable to medical education. The second assertion is the main theme of this discussion, but since not everyone may be prepared to accept the first, I shall begin by commenting upon it.

DEFICIENCIES OF MEDICAL CARE

Deficiencies of care may be due to lack of knowledge, or to failure to apply existing knowledge; here we are concerned only with the latter. Failure to make full use of available medical knowledge may result from one or more of three causes: (1) because resources are inadequate, as they clearly are in underdeveloped countries; (2) because insufficient resources are allocated, as may be the case in developed countries; and (3) because inefficient use is made of the resources which are allocated. The first is an economic problem, and the second essentially a political one. Our concern

here is with the third possibility, that there are deficiencies of medical care attributable primarily to the contemporary pattern of practice.

The inadequacy of the pattern of practice is most conspicuous in underdeveloped countries. It would be wrong, however, to suppose that the difficulties are restricted to distant places. Even where the technical resources of medicine are greatest there are problems, unsolved and probably insoluble within the traditional framework. The most important of them is the low standard of care provided for the mentally ill and chronic sick, the most serious deficiency of the medical services of the Western World. To some extent, no doubt, it could be relieved by increased finance, but this alone will not solve a problem that is rooted in the whole system of care which has evolved during the past two centuries.

Since the mentally ill and chronic sick occupy more than half of all hospital beds, these deficiencies are already serious. They are likely to become more so in view of probable future trends. We are rapidly approaching a time when mortality between the end of the first month of life and the end of reproduction will be trivial, when almost all deaths will occur before or soon after birth and in late life. The most serious problems of morbidity will then be mental illness, and disease and disability associated with aging. This pattern will be attributable in part to the age structure of the population and in part to success with other causes of sickness and death. The outstanding problems with which medicine will be confronted are: prenatal mortality, mental illness, and sickness, disability, and mortality in late life. The contemporary pattern of medical practice is ill-adapted to meet this situation.

REASONS FOR DEFICIENCIES OF CARE

The essential features of the medical services are: a curative service based primarily on hospitals representing divided administration, staffing, and sometimes financing of acute, chronic, and mental services, and a separate public health service concerned with the prevention of disease. It should be noted that these features are independent of the source of support; for example, they exist in Great Britain where all medical services are publicly financed and in the United States where public responsibility is more limited.

The curative services

Hospitals

Many of the problems that confront the hospital service are rooted in the traditional separation of acute, mental, and chronic hospitals from one another. This subdivision does not correspond to the medical, nursing, and social needs of patients, and is wholly attributable to historical circumstances.

The three major classes of patients presented themselves to society at different times and as different problems. The object of the asylum was originally to protect the community from the supposed risks of the insane, and the methods adopted were penal in character. The object of the authorities concerned with relief of need was to make admission to an institution a condition of public assistance, and the foundation of hospitals was an unlooked-for complication of the decision to house the destitute. Until recently it was only in the general hospitals, which inherited the tradition of the voluntary hospitals, that investigation and treatment of disease were recognised as primary objects of institutional care. As a result the three systems were usually established on different sites and were financed, administered, and staffed separately. Moreover, since hospitals were separated they could not share common facilities, and each was conceived as a single building providing a full range of services for selected patients.

These two features—the separation of the three classes of patients and the concept of the hospital as a single building—have serious disadvantages.

1. *Mixing of patients with different needs.* Since segregation was not based on medical assessment, patients in each of the three types of hospital were heterogeneous in respect of need. Those in chronic-sick hospitals—the mentally defective, the psychotic, the senile, the infirm, the venereally infected, and the chronic sick of all ages—had in common only the fact that they were destitute. Those in mental hospitals exhibited the full range of mental and physical illness. Even in general hospitals the isolation from other facilities frequently forced retention of patients not in need of hospital care, who were admitted, or retained after investigation and treatment, primarily for social reasons. And it is still true that the type of hospital to which a patient is admitted is determined, not by his medical needs, but according to whether his illness affects his mind or his body, and by his age.
2. *Artificial division of patients into acute and chronic classes.* The present distribution of services gives the impression that patients fall naturally into two classes according to whether they need short-term or long-term care. This results from the fact that within a few weeks of admission patients in general hospitals are expected to die, to get better, or to get out, whereas duration of stay in mental and chronic hospitals is often unnecessarily prolonged because of inadequate services. It is not possible to say what the distribution of patients would be in respect to duration of stay under adequate services, but it is certain that it would be much less conspicuously bimodal than it is today.
3. *Difficulties of staffing.* Under present circumstances it is impossible to attract enough doctors and nurses to mental and chronic hospitals, whose services are in consequence far below the standard expected in acute hospitals. So long as the hospitals are isolated, they must depend on recruitment of staff prepared to devote themselves exclusively to these services, and the difficulties will remain. They can be overcome

only by placing the mental and chronic hospitals close enough to the acute hospitals to make it possible for the same staff to serve both. This view rests on the belief that most doctors and nurses would be prepared to make a contribution to the care of the mentally ill and chronic sick, particularly if this obligation were acquired naturally in the course of training. They will not do so if it means cutting themselves off from their main interests.

4. *Lack of flexibility.* Another disadvantage of divided hospitals is that they cannot respond readily to changes in the size and character of the institutional population. For example, the isolation of hospitals for tuberculosis and other infectious diseases has made it much more difficult to transfer staff and buildings to alternative use when they are no longer required for their original purpose.
5. *Reduplication of facilities.* Independent hospitals must provide a full range of services. Hence it is not possible to economise by pooling resources or to vary the design and equipment of buildings to make them complementary to one another.

Domiciliary services

At the present time there are two conspicuous trends in the relationship between domiciliary and institutional services. These are toward isolation of one from the other and toward provision of all curative services from hospitals.

In many countries doctors are now engaged almost exclusively on either hospital or domiciliary work. This arrangement has many disadvantages, of which the most serious is perhaps that it restricts a logical development of services. For example, the mentally ill and aged sick cannot be divided simply into institutional and domiciliary classes; they require a complex pattern of care which would cut across traditional boundaries. Yet another disadvantage of separation is that doctors outside hospitals tend to lose touch with the technical advances of medicine, whereas those inside, seeing only selected patients, may lose touch with reality.

The second significant trend is toward provision of all curative services from hospitals or clinics based on hospitals. Where there is no link between domiciliary and institutional work, and where the means of investigation and treatment are located in hospitals, this trend is almost irresistible. If health depended primarily on a battery of technical procedures, there might be little to regret in this change. As it does not, there is a strong case for preservation of a personal medical service.

Hence there are two grounds for retention of domiciliary practice intimately linked with the hospitals. In the first place it is needed for effective mobilisation of a wide range of services in which home, outpatient, and day care are at least as important as inpatient investigation and treatment. And secondly, it is essential for preservation of the personal character of the medical services.

Let us now summarise the main features that should characterise the hospital if it is to avoid the disadvantages referred to above.

1. All types of patients should be cared for on a common site in approximately the proportions in which they occur in the institutional population.
2. The centre should consist of multiple buildings of varied size, design, equipment, and permanence of structure, each adapted to the needs of the class of patients to be admitted.
3. Patients should be classified strictly according to their medical, nursing, and other needs and placed in the unit most suitable for their care.
4. Medical and nursing services should be provided by a common staff.
5. The relationship of the hospital centre to the medical services of the community should be much more intimate than hitherto.

Implementation of the first four proposals would result in elimination of two features of the hospital tradition: the segregation of patients according to criteria (acute, mental, chronic) that do not correspond to their medical needs, and the concept of the hospital as a single independent building providing a full range of services. The fifth proposal would lead to a new relationship between hospital and domiciliary medical services.

The public health service

It is not difficult to see why the preventive and curative services became separated. In a period when the outstanding challenge was infectious disease, public authorities understandably established a public health service dedicated to preventive measures. At first they were concerned only with environmental services, but their work was later extended into the field of personal care, though still limited essentially to prevention. This made prevention of disease a public responsibility and left cure a private one. The separation has been retained in countries such as Great Britain where all services are publicly financed.

In the circumstances in which they developed, the divided services were not inappropriate. Since the infections proved amenable to prevention, there was no anomaly in a public health service directed exclusively to that end. Moreover, in the nineteenth century the curative services had little to offer. In both respects the situation has changed dramatically. The predominant problems are now prenatal mortality, mental illness, and the disease and disability of late life. In none of them can effective research or service be concerned exclusively with prevention or cure. Furthermore, resources for the treatment and care of patients with many forms of illness have improved considerably, and can be expected to improve much more in years to come.

If these conclusions are correct, it will be desirable to remove the traditional division between preventive and curative medicine. In developed countries this can probably be achieved most readily by bringing all medical services concerned with the individual under a common administration and staff. Such an arrangement would place the division between

personal medical care (all types) and the environmental services, rather than between preventive and curative medicine as at present. It should not mean the end of medical interest in the environment, but in many countries the services have now reached a high level and can be entrusted safely to the supervision of nonmedical staff, advised when necessary by medical consultants.

MEDICAL EDUCATION AND MEDICAL CARE

We must now enquire to what extent deficiencies of care are attributable to medical education. It will be suggested that they are due largely to traditional restrictions of the responsibilities of teaching hospitals.

Restrictions of the work of teaching centres

Selection of patients

The patients admitted to teaching hospitals are highly selected, and this is excused on the grounds that selection is necessary for teaching and research. The basis of selection is determined essentially by the current interests of the staff and by accepting only short-term admissions: It virtually excludes the mentally ill and all long-term illness. Moreover, since patients are seen only in the hospital, all that can be obtained from the teaching centre is a restricted view of the medical problems of a limited class of patients.

Methods

With the predominant interest of teaching hospitals in the advance of knowledge, the methods exhibited are inevitably among the most complex, expensive, and time-consuming. Many of them are therefore inappropriate in the circumstances in which most graduates will find themselves.

Origins of the restrictions

It is not difficult to understand how the restrictions arose: they have resulted from the grafting of the concept of scientific medicine onto the tradition of voluntary hospitals. From the time of its rebirth under secular auspices in the eighteenth century, the work of voluntary hospitals was sharply, and understandably, restricted. Those providing voluntary funds were entitled to decide what the charity was in aid of, and a medical staff receiving little or no remuneration could reasonably expect to dictate the nature of its work. Both interests coincided in agreement to leave to the state the intractable problems of mental illness, infectious disease, and all types of infirmity associated with destitution. Hence the Webbs'

observation that the voluntary hospitals took what was interesting while the public hospitals were left with what was difficult.[1]

The contrast between the interesting and the difficult was accentuated at teaching centres by the movement toward scientific medicine in which the Flexner report had so crucial a place.[2] The unexceptionable wish to make medical schools centres of research led inevitably to selection of patients representing areas in which knowledge was advancing. This did not include the mentally ill or the chronic sick, who were thus removed from the vision of students and the minds of research workers.

Disadvantages of the restrictions

The traditional restrictions of the work of teaching hospitals have three serious disadvantages: one in the effect on medical education, another with respect to medical organisation, and a third in relation to medical research.

Medical education

It is widely recognised that doctors acquire their concept of practice from their clinical teachers and leave the teaching hospital determined to do the kind of work they saw as students. Since the educational experience excludes responsibility for large classes of patients, and is based on the most sophisticated methods, it provides an inadequate preparation for the realities of practice. The disadvantages, evident in developed countries in the standard of care of the mentally ill and chronic sick, reach grotesque proportions in underdeveloped countries.

Medical organisation

Restricting their work as they do, teaching centres can make little contribution to study of the way in which medicine is to be organised. The form of the National Health Service in Great Britain, or indeed of the medical services of any country, owes little to ideas developed at teaching hospitals (or for that matter in university departments of public health). This deficiency becomes more obvious when we realise that patients cannot be divided simply into those ill enough to be admitted to a hospital bed and those well enough to remain at home, and that an effective service requires a complex pattern of practice. In the care of the mentally ill, for example, it is now realised that we need facilities for investigation and complex treatment, opportunities for retraining, occupational therapy and workshops, day hospitals, night care for patients who work in the community, and continued supervision from hospitals of patients discharged home. It is here that the restrictions in teaching hospitals are so serious.

[1] Royal Commission (1905-09) on the Poor Laws and Relief of Distress. Minority Report, part I, 1909.

[2] Flexner, A. *Medical Education in the United States and Canada* (New York: Carnegie Foundation, 1910).

By drawing their patients from a limited segment of the institutional population, and by restricting their activities to inpatient and traditional outpatient care, they can make no substantial contribution to the exploration of new and more effective forms of practice. It is a remarkable fact that the most farsighted services for the mentally ill in Great Britain are not to be found in teaching centres, but in one or two smaller provincial towns where a progressive hospital phychiatrist and medical officer of health have had the imagination and drive to overcome restrictions which tradition and, to some extent, the form of service still impose.

Medical research

A third disadvantage of the traditional restrictions is that in two ways they limit the scope of the research worker. In the first place they remove important diseases from his observation and experience; the slow progress with mental deficiency and schizophrenia must be due in part to their exclusion from teaching hospitals. Secondly, there is a large range of medical problems whose solution requires study of representative patients drawn from known populations. (In most teaching centres it is quite impossible to identify the population from which patients are derived). The aetiology of congenital malformations, the causes of toxaemia of pregnancy, and the nature of essential hypertension are examples of problems (in very different age periods) which have in common the requirement for a representative population as a basis of advance.

PROPOSALS

It is suggested, therefore, that staffs of teaching hospitals should accept responsibility for exploring new patterns of practice, and thus put themselves into the forefront of thought about the future of medical organisation as well as of medical research. They should do this both because intellectually they have an important contribution to make, and because the demonstration of a modern concept of practice should be one of the first obligations of a teaching centre.

Perhaps the simplest means of creating the environment in which this can be done is to accept responsibility for all institutional services of an area, preferably the one in which the teaching hospital is placed. This in itself would be a tremendous advance, since it would insure access to representative patients drawn from a known population. But we have also stressed the advantages of breaking down the traditional barriers between institutional and domiciliary services and between preventive and curative medicine. For these purposes it would be desirable not to restrict the work of the teaching centre exclusively to institutional care, and the ideal arrangement would be to make it responsible for all services in the defined area.

One important consequence of these changes would be that the work of teaching centres would vary considerably in different parts of the world,

according to the problems of the country and the resources available. It is one of the anomalies of contemporary medical education that it aspires to a concept of "ideal practice" which is uniform and presupposes the availability of selected patients and unlimited resources. It is questionable whether these conditions anywhere exist; in underdeveloped countries, which are attempting to pull themselves up by their own bootstrings, a system of education based on such assumptions can do little more than prepare doctors to use methods which are not available for the benefit of patients who do not exist.

We have stressed the advantages in relation to research of representative patients and a defined population. There are of course many problems which can be advanced only by study of the highly selected patients now admitted to teaching hospitals. There should be no difficulty in accommodating both requirements. All that is needed is to make the size of the defined area such that numbers of representative patients drawn from it are in a reasonable relation to numbers of selected patients drawn from a much wider area for other research purposes.

Nothing in these proposals threatens the high level of technical excellence which teaching hospitals have always cherished. Recognition that the welfare of the mentally ill requires a far more comprehensive service than the one available hitherto is quite compatible with the belief that biochemical investigation may one day make an important contribution to our understanding of schizophrenia. It is a false antithesis which poses a social approach as an alternative to a technical approach, and indeed the terms themselves are misleading. What is wanted is recognition that prevention and treatment of illness need a complex pattern of services, which range from social amenities to surgical procedures. The effective mobilisation of these services requires a revolution in thought and practice, which must be initiated and sustained from teaching centres.

The establishment of teaching hospitals, equipped and staffed so that they could make a contribution to the study of these problems, would be an event of tremendous significance in medical history. The path which medicine has followed hitherto, invaluable as it is, cannot alone provide the basis for mobilisation of the resources on which health is now known to depend. The organisation of teaching centres in such a way as to preserve the present tradition, but to add to it the wider concept of medical responsibility and interest, might rival in significance the sanitary revolution in the nineteenth century, and the impact of the Flexner report in the early twentieth.

Summary

Let us now try to sum up. Irrespective of the way in which they are financed, the contemporary medical services are characterised by (1) separation of responsibility for the mentally ill, the chronic sick, and the acutely ill, and (2) a public health service devoted exclusively to the

prevention of disease. The division of responsibility is attributable to the fact that each class of patients presented itself to society at a different time, and as a different set of problems, and the character of the public health service is due to its development in a period when the outstanding challenge was infectious disease. It is suggested that both features are unsuited to the main problems which medicine will face in the future. They are: prenatal mortality, mental illness, and sickness and disability associated with aging.

Improvements of the pattern of practice will require changes in medical education. At present the patients admitted to teaching hospitals are highly selected. This selection was traditional in voluntary hospitals and has been thought to be consistent with the requirements of scientific medicine. It has three serious disadvantages: it gives medical students a false impression of the medical task and of the methods appropriate to it; it prevents many of the ablest people from contributing to thought about the way in which medicine is to be practised; and since it removes large segments of work from the vision of research workers, and denies them access to representative populations, it has serious disadvantages in relation to medical research.

It is suggested that these disadvantages can be overcome by accepting responsibility from the teaching centre for all services, institutional and domiciliary, preventive and curative, for a defined area. This would create a laboratory within which it would be possible to explore new patterns of practice, to demonstrate to students the best arrangements consistent with contemporary knowledge and resources, and to promote important subjects and methods of medical research which have hitherto been neglected. It can be done without prejudice to traditional interests by making the size of the defined area such that numbers of representative patients derived from it are reasonable in relation to numbers of selected patients drawn from a much wider area for other research purposes.

At the present time we are attempting to prepare students for the practice of medicine by methods more appropriate to its advance. In the new teaching centre they would learn both to acquire new knowledge, and to make the best of such knowledge as we already possess.

PART III

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CHAPTER 7

Social Forces and the Medical School

A. Medical Schools and the Social and Economic Environment

BY ODIN W. ANDERSON

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Family income has been increasing, as have family expenditures for personal health services—although the quality and effectiveness of the services have made them more expensive. The medically indigent have declined in number and variety, even taking into consideration the fact that families in all income groups today are potentially indigent if they lack adequate health insurance. Third-party health-service payments from both public and private sources are increasing rapidly, and there has been growth in the utilization of health facilities. The implications for medical education center largely on the changing character of the teaching-patient group and on curricular revisions suggested by trends in the medical economy.

THERE HAVE BEEN many developments in the methods of paying for personal health services, and there has been much improvement in the general economic well-being of the bulk of the population in this country. It can now be seen that these trends affect medical schools in two ways: (1) they are affecting the quantity and composition of patients available for teaching and demonstration, and (2) they are affecting our thinking about the content of medical curricula and revisions that may be necessary in the training of future physicians who will be paid increasingly by private health insurance agencies and various government programs. Changing factors in the medical economy are influencing medical schools both internally and externally. This paper will attempt to document what has happened in the last 25 years.

ECONOMIC BACKGROUND

Family income

Improvements in income for the bulk of the population, despite the decreasing value of the dollar, have enabled more families and individuals to pay for personal health services on a private basis. There has been a rapidly decreasing proportion of families in relatively low income groups.

TABLE 7.1
FAMILIES AND UNRELATED INDIVIDUALS IN HOUSEHOLDS BY TOTAL MONEY INCOME
(United States, selected years)

Income	Households					
	1948		1953		1958	
Total money income	100%		100%		100%	
Under $1,000	16.2	32.0	14.3	25.5	11.0	22.1
$1,000-1,999	15.8		11.2		11.1	
$2,000-2,999	19.8	38.6	12.5	27.7	10.2	22.4
$3,000-3,999	18.8		15.2		11.2	
$4,000-5,999	18.5	27.0	25.3	42.0	24.6	48.1
$6,000-9,999	8.5		16.7		23.5	
$10,000 and over	2.5		4.6		8.4	
Median income	$2,909		$3,789		$4,500	

Source: U. S. Bureau of the Census. Current Population Reports—Consumer Income. Series P-60, No. 33, January 15, 1960. Table 19, p. 31.

Table 7.1 shows how the proportions in the range of income classes changed markedly from 1948 to 1958, a short span of ten years. In 1948, 16.2 per cent of the families had money incomes of $1,000 or less. In 1958, the percentage was 11.0. At the other end of the range in 1948, 27 per cent of the families had money incomes from $4,000 to $10,000 a year. By 1958 this percentage had increased to 48.1 per cent. Families with incomes of $10,000 and over had increased from 2.5 per cent to 8.4 per cent. Clearly there was a broad base of improvement, even though the purchasing power of the dollar decreased during that decade by about 25 per cent.

Family expenditures for personal health services

Family expenditures for personal health services have increased both in total dollars and as a per cent of income over the years. In 1929, for example, 3.5 per cent of annual family income was laid out for personal health services; in 1957 this percentage had increased to 4.9 and is now exceeding 5 per cent. Likewise there has been an increase in family expenditures for personal health services as a percentage of all items purchased by families in a year, from 3.7 per cent in 1929 to 5.3 per cent in 1957.

Expenditures *per person* for all private personal health services in this country increased from $24 in 1929 to $94 in 1958. At the present time expenditures *per family* in a year approximate $300. The family, which includes one-person households as well, is the logical economic unit. The $300 per family falls very unevenly over families in a year. Table 7.2 shows that less than 3 per cent of the families have no expenditures in a year, whereas almost 32 per cent incur expenses of $300 or more, and 4.6 per cent have expenses of $1,000 or more.

When the distribution by magnitude of expenditures is observed for each major type of service, families again vary widely in expenditures. Table 7.3 shows that 14 per cent of all families had expenditures for

TABLE 7.2

PERSONAL CONSUMPTION EXPENDITURES FOR HEALTH BY MAGNITUDE PER FAMILY

(United States, 12-month period, 1957-58)

Expenditures per family (dollars)	Per cent of families	
None	2.9%	
$1-49	17.3	31.3
$50-99	14.0	
$100-199	20.7	34.2
$200-299	13.5	
$300-399	9.2	31.6
$400-499	5.7	
$500-749	8.3	
$750-999	3.8	
$1,000-1,999	3.9	
$2,000 and over	0.7	
	100.0	

Source: Odin W. Anderson, Patricia Collette, and Jacob J. Feldman. ***Family Expenditure Patterns for Personal Health Services, 1953 and 1958: Nationwide Surveys.*** Health Information Foundation. Research Series No. 14, 1960; and Health Information Foundation, "Our Increased Spending for Health," *Progress in Health Services,* February 1960.

TABLE 7.3

PERCENTAGE DISTRIBUTION OF GROSS EXPENDITURES OF $200 OR MORE FOR PERSONAL HEALTH SERVICES AMONG FAMILIES

(United States, 12-month period, 1957-58)

Type of service	Per cent of families	
All services		45%
All physicians		14
Surgical	4	
"Other" physicians	8	
Hospital		10
Medicines		6
"Other medical"		2
Dental		6

Source: Odin W. Anderson, Patricia Collette, and Jacob J. Feldman, ***Family Expenditure Patterns for Personal Health Services, 1953 and 1958: Nationwide Surveys.*** Health Information Foundation. Research Series No. 14, 1960.

physicians' services of $200 or more in a year. Continuing with the amount of $200 or more, 4 per cent of the families had such expenditures for surgery, 8 per cent for nonsurgical and nonobstetrical services of physicians, 10 per cent for hospital care, and so on. Clearly there is a problem for families in paying for personal health services over certain magnitudes irrespective of income. This problem stimulated the rise of voluntary health insurance and the development of certain government programs over the years.

The concept of medical indigence

Related to the unpredictable nature of expenditures for personal health services is the concept of medical indigence, which is an offshoot of the time-honored idea of indigence. Indigence is defined by law (varying in different localities) and persons classified as indigent are presumably unable to provide for themselves the minimum essentials of food, clothing, shelter, and medical care. They represent a very low-income and no-income group. In the United States the general term used since the Social Security Act of 1935 is that of "recipients of public assistance." In the federal terminology, these recipients are in turn subdivided into categories of dependent children, the blind, the aged, and persons with permanent total disability, plus a catchall group called recipients of general assistance.

Public responsibility for the provision of medical care for these groups has long been recognized and implemented in various degrees of adequacy.

As personal health services have changed in character and improved in quality and effectiveness, they have become more expensive. The costs of needed services also have become more unpredictable, so that most families today are unable to save, or do not save, for costs of major personal health services without some sort of insurance mechanism.

Public responsibility for the provision of medical care to those immediately above the line of destitution, however defined, is relatively new (even though some reference was made to it in welfare statutes a hundred years ago). This concept recognizes medical care as a *separate* need apart from food, clothing, and shelter. Some low-income families may have enough income and resources to make them ineligible for public assistance, but not enough to pay for needed personal health services. This rather nebulous group is now called the "medically indigent"—not indigent because of inability to provide themselves a minimum of food, clothing, and shelter, but indigent because of inability to pay for sizable personal health services.

In its present form this popular definition is stark and over simplified. When examining the literature on medical indigence, one has the impression that the medically indigent are those who are not receiving public assistance, and are recognized by hospitals and physicians as being unable to pay for recommended medical care. To hospitals and physicians, the need for care and the lack of sufficient resources are clear. Consequently it is assumed that the community should shoulder the financial responsibility.

The concept of medical indigence can be discussed on at least three levels:

1. The first level provides a concept and a definition of medical indigence in the abstract. It ignores welfare traditions, limitation of funds, and other factors that must always be taken into account when social problems are considered. This concept in the abstract would seem to imply that families on almost any income level are potentially medically indigent. It has been demonstrated that in a cross section of families in the country during a given year, a few experience costs of personal health services equal to half or all of their annual incomes. Others experience no costs, and still others incur costs of moderate amount in relation to their incomes. Occasionally one hears of self-sustaining and financially independent families assisted by The National Foundation, the American Cancer Society and similar organizations concerned with long-term and extremely costly diseases. Many public programs for tuberculosis and mental disease also recognize this problem, as do crippled children's services and services for vocational rehabilitation.

2. The second level can be called the social definition according to how the general public, the professional personnel in the health field, public officials, and legislators perceive the problem. People tend to regard the problem of medical indigence as one peculiar to low income.

3. The third level might be called the administrative definition—the concept that emerges from a law establishing the program and the rules and regulations applying to that law. The budget is the most concrete expression of the administrative definition of the problem; it very likely represents a compromise between the social definition and the realities of implementing a given program. Both the program administrators who make budget recommendations and the legislators who appropriate money act in terms of what they conceive the magnitude of the problem to be in relation to availability of funds.

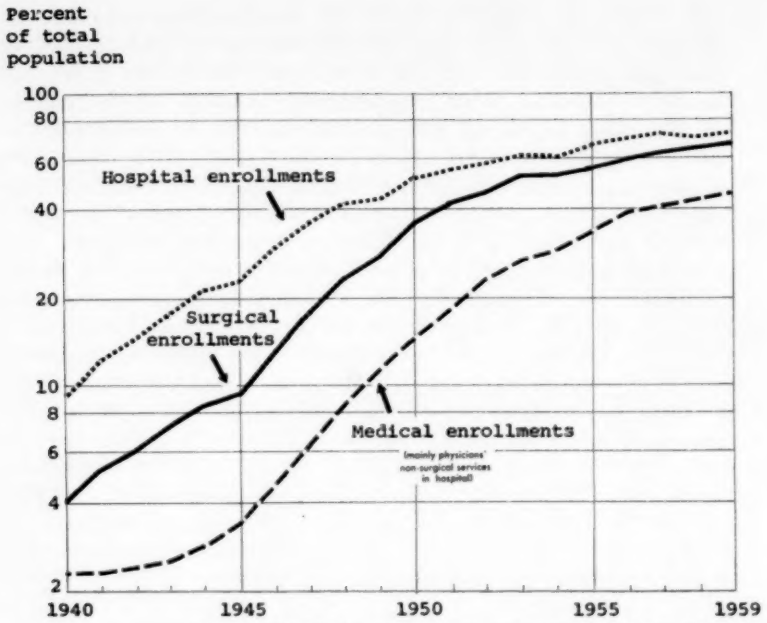
An estimate of the number of *medically* indigent patients in this country is a fruitless exercise without a few arbitrary assumptions. Income is always the basic criterion relative to the medical expenses that will be incurred, but families in all income groups are potentially medically indigent if they do not have adequate health insurance. To give some idea of how many million families would be involved, estimates of the per cent of families below certain incomes can be made from Table 7.1. (One per cent equals 530,000 families.) For example, in 1958, if $1,000 were selected arbitrarily as the income below which families would be medically indigent, there would be 5,830,000 families in the United States in this category. If $2,000 were selected as the arbitrary limit, there would be over 11,500,000 families in the medically indigent group.

TRENDS IN THIRD PARTY PAYMENT

The shift in payment for personal health services from the patient to a third party is a rough indication of the degree to which the providers of service are becoming increasingly involved in methods of providing and paying for services.

Thirty years ago third-party payment represented a very small part of the total expenditures for personal health services from both public and private sources. Such third-party payment as existed was almost solely from various levels of government for traditional responsibilities of government. There was no voluntary health insurance as we know it today. Today, almost 40 per cent of the payments for personal health services, public and private, comes from third parties—government and voluntary health insurance, which share this 40 per cent about equally. Voluntary health insurance pays approximately one-quarter of the total private expenditures for personal health services. Over one-half of the payments to general hospitals today in the private sector are from insurance, as are almost half of payments to physicians for surgery.

The increase in third-party payments in the private sector has been dramatic (Figure 7.1). Today approximately 70 per cent of the population have some type of health insurance, usually at least hospital care. A close second is insurance covering the costs of surgery, and third is insurance covering the costs of other physicians' services, mainly in the hospital. Around five million people are covered by comparatively comprehensive insurance for physicians' services, including home and office calls.



Source: 1940-1950 data: O. N. Serbein, *Paying for Medical Care in the U. S.*, Table 136, p. 379. 1951-1955 data: Health Insurance Council, "The Extent of Voluntary Health Insurance Coverage in the U. S.," annual surveys (1951 data, Annual Survey, June 1952, p. 11; 1952 data, Annual Survey, Sept. 1953, p. 7; 1953-4 data: Annual Survey, Dec. 1954, p. 7; 1955 data, Preliminary Report on Annual Survey, Aug. 1956, p. 6); 1956 data: estimated as of July 31, 1956 Preliminary Report. Health Insurance Institute, *Source Book of Health Insurance Data, 1959*, New York, 1959, p. 11. Census population estimates, "Current Population Reports," P-25, No. 220. (Reprinted from Health Information Foundation, *Progress in Health Services.*)

FIG. 7.1.—U. S. population protected by hospital, surgical, and medical expense insurance, 1940-59.

Among the various income groups, 40 per cent of families in the lower third of incomes (under $3,500) had some form of health insurance in 1958. Within the middle third ($3,500-4,000) 79 per cent had insurance, and 86 per cent of the families in the upper third of income ($6,000 and over) had protection.

Data on general hospital admissions indicate that in 1958 only one-fourth of all hospital admissions were uninsured; for patients admitted with a family income of less than $2,000, 70 per cent were uninsured. Only 30 per cent of the in-hospital surgery patients were not insured; for patients with incomes less than $2,000, 80 per cent had no insurance.

Referring again to the family survey of 1958, 25 per cent of the patients with hospital insurance admitted to hospitals were in wards, while 44 per cent of those admitted without hospital insurance had ward accommodations. Of the insured patients, 50 per cent were in semi-private rooms, as

compared with 37 per cent of the uninsured. Clearly there is an association between type of hospital accommodations and presence or absence of insurance.

TRENDS IN UTILIZATION AND PUBLIC ATTITUDES

All measurements of use of personal health services over the last 30 years point to increasing use. In 1935 the admission rate to general hospitals in the country was 59 per 1,000 population. Recently the admission rate has climbed to 130. Days of care per 1,000 population have increased during the same period from 880 to 1,250, indicating that the length of stay per admission has been shortened from 15 days to about 10 days.

There has also been an increase in the use of physicians' services. In 1929 there were 2.6 physicians' services per person in the country compared with 4.8 in 1957. Further, there has been an increase in the proportion of persons who see a physician at all in a year from about 50 per cent in 1929 to 60 per cent today.

There has also been a change in the use of hospitals by income groups. Historically, the lower income groups used hospitals less than upper income groups, but today this is no longer true; the reverse is true. For surgical care there is a flattening out of differences by income groups. For physicians' visits there is considerably less difference between income groups today than was true 30 years ago.

Past trends in health insurance and present public attitudes toward health insurance indicate further expansion both in terms of enrolling more people and in expanding the range of services paid by insurance. This is especially true for physicians' services out of the hospital. In a nationwide attitude study by National Opinion Research Center and Health Information Foundation in 1955, over 70 per cent of the public expressed positive interest in insurance plans in which the range of benefits is greatly extended. Also, over 60 per cent of the queried doctors (who were mentioned by the sample of adults as being their regular doctors) expressed approval of extending benefits.

The medical establishment is generally in good repute and physicians enjoy a high status. The medical profession appears to have a solid base to improve even further this good repute. A significant proportion of the general public complains about waiting too long in physicians' offices and believes physicians do not handle patients with consideration, but there is no doubt that there is great confidence in the scientific excellence of modern medicine, and a vague though real appreciation of the fact that modern medicine rests on research and training.

CONCLUSIONS

The foregoing data indicate clearly that third-party payment for personal health services is here to stay. Given the obvious momentum in recent years, it is expected that the governmental sector will continue to

pay for the current responsibilities given it—veterans, Medicare for dependents of servicemen, patients with long-term illnesses such as tuberculosis and mental disease, and public assistance groups. Likewise, health insurance in the private sector will continue to cover more people under a wider range of services. All indications point to a high-level economy and consequently great purchasing power.

The obvious consequence for medical schools is that, although a great deal of free hospital and in-hospital physician care will continue to be given, continuing expansion of voluntary health insurance and maintenance of good incomes will probably cut further into the traditional supply of patients for teaching and demonstration. Obviously there will always be patients who are destitute or near destitution, but apparently they are not in the same plentiful supply as to range of diseases and age as was true even a few years ago. Medical schools must thus use other devices for obtaining patients for teaching.

The other consequence is that medical school graduates are now entering an economic environment of medical practice which has changed considerably. It is necessary for medical schools to explore the changes required in current medical school curricula to prepare future physicians for the kind of world they will be entering. This is a world, as touched on briefly in this paper, in which there are important changes taking place both in the organization and financing of services. Both have resulted from a much more complicated and extensive technology.

It would then seem that the change in organization and financing of medical services is increasingly important for medical schools to comprehend, because this change affects their very orientation toward medicine and medical care. The situation is really a result of the fundamental changes mentioned, and can be solved only by understanding the environment in which medical schools are an inescapable part.

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B. Influences of Voluntary and Governmental Health Agencies in Formulating the Task of Our Medical Schools

BY JONATHAN E. RHOADS

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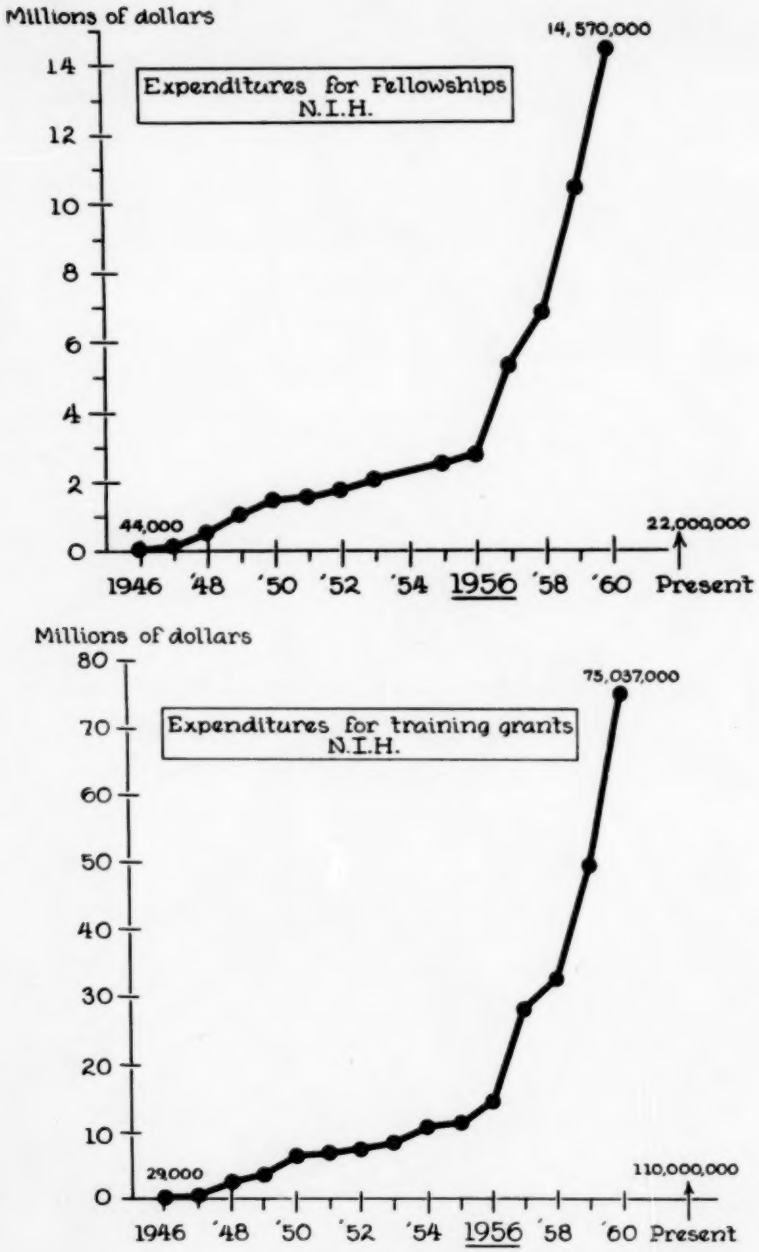
The growing incidence of support for specific kinds of medical research has encouraged increasing specialism and emphasis on research training. The demand thus created is an additional factor to be considered in planning for a sufficient number of medical schools to maintain the present ratio of practicing physicians to total population.

The additional support for students in the medical and biological sciences affects medical education in a number of ways and makes problems in recruitment for medicine particularly relevant. Apparently public demands are being met with regard to specific research areas supported, and the over-all impact appears thus far to be socially advantageous.

Size and growth of the programs

AMONG THE extramural factors at work in shaping the medical activities of the future are the programs of government and the voluntary health agencies. Let us look first at the size and growth of some of these organizations. The American Cancer Society, for example, has grown to a $30-



Source: Dr. Ernest Allen, Chief, Division of Grants, N. I. H.

FIG. 7.2.—Expenditures for fellowships and training grants, National Institutes of Health.

TABLE 7.4
GROWTH OF MEDICAL FELLOWSHIPS FROM 1945-55*

Year	Fellowships starting in each year
1945	8
1947	141
1949	303
1951	225
1953	295
1955	352

*Source: Arthur S. Cain, M.D.

million-per-year fund agency in the period from 1944 to 1959. The American Heart Association has had an even more rapid growth, although it has not yet reached so high a figure. The National Foundation for Infantile Paralysis soared to receipts of over $50 million. Most spectacular of all, however, has been the growth of the National Institutes of Health. Figure 7.2 shows two aspects of this growth. In a period of about 15 years, the NIH fellowship program has grown from $44 thousand to $22 million, or a 50-thousand per cent increase. On top of this is a traineeship program that started about 1946 with $29 thousand and has now grown to a level of $110 million, or five times the size of the fellowship program.

Thus, if there are 8,000 M.D.s being graduated per year and $132 million available in traineeship and fellowship programs, one comes up with a figure of between $16 thousand and $17 thousand per graduate—a figure probably in excess of the cost of the four-year medical education. Of course this is distributed over a wider group, since many trainees are not physicians. Furthermore, the advanced fellowship programs have sprung up increasingly as the various agencies have recognized that it is not enough merely to start young men; they must have some opportunity to carry on in full-time research after they are trained for it.

Impact of the programs

Table 7.4 shows the growth of medical fellowships starting each year from 1945 to 1955, and Table 7.5 shows some important sources of these fellowships. One might properly ask whether these agencies have created a bias in favor of one line of investigation over another. I think many people would agree that the thrust of the National Foundation for Infantile Paralysis focused a great deal of attention and able manpower on the problems of this dread disease. I think no one would say that the results were not dramatically worth while, and the saving not only in human suffering but in actual economic terms vastly exceeded the very high costs of the program.

It is still possible to ask whether the $50 million a year that went into this effort might not have been more productive in some other area, such as arteriosclerosis. There would appear to be no firm answer, and to me it seems entirely appropriate that the public should express particular con-

TABLE 7.5
MEDICAL FELLOWSHIPS SUPPORTED BY SPECIFIC AGENCIES IN THE UNITED STATES*
(as of 1958)

Name of supporting agency	Total fellowships
National Institutes of Health	1723
American Cancer Society	266
National Foundation for Infantile Paralysis	250
American Heart Association	227
National Research Council	189
John and Mary R. Markle Foundation	181
Life Insurance Medical Research Fund	118
18 other agencies granting 1 to 93 fellowships each	507
TOTAL	3461

*Source: Arthur S. Cain, M. D.

cern over certain diseases. Unfortunately, the apparent public reaction may be susceptible to a high degree of manipulation by the Madison Avenue boys who are attached to nearly all these important causes—and to some that are less important in terms of the aggregate number of people affected.

The choice of a field of research is, of course, made on several grounds. One of the important grounds is chance of success. This can never be estimated accurately, but it is clearly related to the state of knowledge in a given area. Judgments about this are best made by professional investigators in the field or in related fields.

The other great basis for choice between investigative projects is the need for the answer. Here humanity as a whole should have the greatest voice. This voice may be expressed through the Congress, or it may be expressed through the voluntary health agencies. Either way, it would seem entirely appropriate that the people of the United States should let it be known that they feel, for instance, that cancer or arteriosclerosis or arthritis or some other condition deserves a high priority from the standpoint of human need. Properly, this consideration can influence to some extent the choice of field by qualified investigators who will, of course, also be influenced by their estimate of the ripeness of the field for further advance. Actually, through the National Institutes of Health, support is available for almost the entire field of medical research. In fact, I cannot think of a subject area that is excluded.

The net impact of these several programs, then, is to encourage a large number of individuals finishing medical school to specialize, and beyond this there are extra inducements to the man who will devote himself to full-time investigation or a combination of teaching and investigation. Thus the emphasis on research has been and is being greatly enhanced. At the same time the bulk of our physicians must continue to have a training that is primarily oriented to patient care, otherwise the "night ratio" of physicians to patients will be even more seriously reduced—i.e., although the over-all physician ratio may seem to be holding up, it is not adequate when we consider only those physicians who are available for patients at night.

Problems for medical schools

The situation described above has contributed to a number of the problems facing medical education. One is to provide a strong elective for students who are able and eager to prepare themselves for careers in research. One way of doing this, I believe, would be to have an educational program slanted toward two degrees for many of our future professors —the professional M.D. degree and a research degree, probably the Ph.D. The preclinical courses should serve both regular students and research-oriented students in common. The third year could be focused on the important clinical fields much as at present, and the fourth year should be to a large extent elective to enable the research student to get a good start on work for a thesis. He might then complete his Ph.D. in one or one and a half additional years of full-time research or its equivalent.

At the same time medical schools are faced with the problem of preparing students for careers oriented toward patient care. The particular need is for the family physician. It is not appropriate here to go into detail on the number of educational experiments—actual and proposed, successful and unsuccessful, postgraduate and undergraduate. Some of these are discussed at considerable length in chapters 3, 4, and 5 of the present volume.

Another problem is the concern that federal support will bring federal control, and a few comments can be made here. The people of the United States, and particularly those associated with its medical schools, owe a great debt of gratitude to the men in the Public Health Service for doing such a good job in insulating federal support from federal control. However, we have already witnessed the decision of the Congress to limit federal loans to students by requiring not only a loyalty oath but a disclaimer affidavit. This latter provision is considered by some legal experts to be in the nature of "thought control."

Probably our greatest safeguard against government interference is the maintenance of a group of privately supported universities with medical schools. How long this protection can be effective, however, is not entirely clear, and federal support for all medical schools might come in the next few sessions of Congress.

The problem of recruitment

The complex problems created by a variety of social forces, including the influence of government and voluntary health agency programs, makes recruitment for medicine a timely concern for medical education. It behooves us to take a look at some of the negative factors.

First among the discouraging factors I would place the debasement of the physician-patient relationship and the substitution of other images of the practicing physician. All of us have seen this expressed in cartoons in the public press, for example. There is a continual implication that the practicing physician is interested solely in the patient's fee. Actually, of course, medical fees have advanced substantially less than any of the other components of medical care.

Some of us within medical education contribute to the lack of emphasis on the patient. The patient is no longer thought of as the place to learn about human health and disease. I see this reflected among our interns, who are unhappy if they are not receiving formal instruction at every turn. The fact that they have an opportunity to see and study patients with complicated conditions that might not turn up in five years of solo practice does not impress them, at least not favorably. And it might seem that the criterion by which a young faculty member is measured for his promise is more and more his ability to get assignments that will avoid much of his time being spent with patients.

Another deterrent to medical recruitment is the financial factor. The financial aid that has been available to medical students has been doled out on the undergraduate pattern of need rather than the graduate pattern of ability. Other fields with a shorter period of training have a relatively greater availability of support, and some of these fields are potentially at least as remunerative as medicine.

Then there is the uncertainty about military service. I have been unable to obtain a valid comparison of the amount of time required by government of men in Ph.D. programs as compared with those in M.D. programs. The impression would remain, however, that at present the M.D.s are somewhat more regularly required, called, or pushed into volunteering to devote two or more years to government service. Whether or not this is the case, the already very long preparation for medicine gives the additional deferral of career plans a special emphasis.

To my mind, one of the greatest specters confronting individuals who are considering medicine versus law versus business administration versus a scholarly career in some other field is continual pressure in the direction of socialized medicine—e.g., the provision of medical care to the population generally through the introduction of the government into the medical picture as the third party who pays the physician. Undoubtedly it will be possible to recruit plenty of people to serve in this system, just as it is now possible to recruit plenty of people to serve as civil servants in other areas. But it may discourage some very able prospective physicians.

Traditionally a good many people have sought a career in medicine because of a strong desire to develop relative independence of judgment and accept great responsibilities; many of this group of people will undoubtedly be driven out of medicine as long as there are other activities available to them that offer a higher degree of freedom. Even those who are in favor of socialization should, I believe, oppose socialization of medicine at a date earlier than all the other walks of life. There is the distinct risk that a premature shift might divert people with initiative and a sense of responsibility to other fields of activity.

Conclusion

By way of conclusion I would like to reiterate a few points introduced above. Most important, I think, is that our projected requirements for

M.D.s in the coming years are completely unrealistic. It is clear there will be a rapidly increasing demand for physicians trained to do research. And the more young physicians who go into research, administration, and full-time teaching, the more we will decrease the physician-patient ratio for practice—particularly what I have called the "night ratio." Other factors contribute to my belief that we will need many more physicians than present projections indicate; there are, for example, increasing demands for personalized service, for psychiatric service, for prophylactic service, for more complicated records, and for information service.

The recruiting problem facing medicine is a very serious one. Facing up to it will require a realistic appraisal of all the factors mentioned above. Most urgent perhaps is the need to look at the financial impact on students and to encourage recognition of the fact that education is work that is highly beneficial to society and that should be rewarded regardless of individual need.

On the whole it cannot be said that the impact of government and voluntary health agency programs has thus far been socially injurious. The financial pressures exerted in favor of special causes are probably a legitimate means of interpreting needs felt by the public for advances in the several fields of medicine. The programs of support can perhaps be viewed as endorsing emphasis on the science of medicine more than on the art.

CHAPTER 8

The Consumers of Medical Care

A. Expectations of Organized Labor as a Consumer Group

BY LEONARD WOODCOCK

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There are some major current problems in medical education, medical care, and medical economics. The increase in the cost of modern medical education has outrun the traditional sources of financing. Substantial federal help is needed not only for construction, enlargement, and renovation of facilities, but also for operating costs. A strengthened scholarship program is needed and far more adequate stipends must be provided up through internship and residency. Labor and other segments of the population will support substantial federal financing for the extension of medical education. With increasing public support, however, medical education would be expected to assume a broader social responsibility in the advancement of medicine. The organization of hospital care and of medical practice is in arrears. Group practice prepayment programs are in the forefront of evolutionary change in medical practice, employing more advanced principles of payment and of organization. Medical education and group practice prepayment can both gain by pooling needs and resources. Involvement in a direct service program would enable schools to tap a new reservoir of patients and to deal with the total health maintenance needs of people, involving continuing health care for a whole group rather than one-time contact with a specific illness or disability. While medical schools must seek a degree of harmony with medical practice of today, they are also obligated to train new doctors to deal with the proliferating problems of tomorrow.

FROM THE LOWER depths which Abraham Flexner described 50 years ago,[1] American medical education and American medicine have risen to a pre-eminence unchallenged throughout the world. Yet in spite of all the progress that has been made, we have seen a crescendo of criticism directed at American medicine—in which medical education is not ab-

[1] Flexner, A. *Medical Education in the United States and Canada* (New York: Carnegie Foundation, 1910).

solved—in newspapers, in magazines, in books and, more important, in the minds of a great many millions of people. This theme was invoked in the supplement on the *Crisis in American Medicine* in *Harper's* and stated with charity and eloquence by Rene Dubos who said:[2] "Medicine today is like a mighty and glamorous ocean liner with powerful engines and luxurious appointments but with a defective compass and an absurdly small rudder. It moves fast but its course has not been charted, its ports of call are uncertain, and its destination unknown."

Observations on medical care

My close contact with the nation's industry and its labor force, my involvement in the operation of a university and its medical school, my observation of the hospital community and health insurance, all verify the uncharted, uncertain, and unknown state of medical care. Although the criticism may at times be misdirected, inaccurate, and even unjust, it springs fundamentally from real deficiencies in the present performance of medicine, from gross weakness in the arrangements for the financing of medical care, and from a growing perception that something better is needed. Above all, the climate of decision making has been regrettably rigid. Also out of my experience I have derived a growing conviction that the interests of medicine, medical education, health insurance, and the public (including labor) are not irreconcilable—that, indeed, only together can a course be charted for the critical future.

As a labor leader concerned with the health needs of working people and deeply involved in prepurchasing about $190 million of health care annually for our more than a million members and their families, I have very serious concerns about the status and the course of voluntary prepayment in America today. Comforting assurances about the mere spread of coverage conceal an underlying inadequacy of protection. Even under the best generally available protection, subscribers must make substantial, and often still unpredictable, payments out-of-pocket for medical care at the time of illness. Nationally, only about one-fourth of private medical expenditures are prepaid, and for persons who have some insurance, only about one-third of costs are covered. Nor is there yet in evidence a clear conviction of the need for bold extensions in the scope and major improvements in the design of protection.

Round after round of premium increases have served neither to increase substantially the scope of protection nor to bring the ordinary worker in the health industry up to a reasonable level of living. Labor feels very strongly that the hospital employee should not be called on to subsidize medical care, that he is entitled to a just wage. He is organizing to get it by the drive to unionize hospitals.

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[2] Dubos, Rene J. "Beyond Traditional Medicine," *Harper's Magazine* 221, October 1960, pp. 166-8.

The spread of voluntary health insurance demonstrates the community's conviction that modern medicine is well worth buying. People will no longer accept economic barriers to modern medical care. One way or another they will get it. Though inarticulate and misdirected at times, this public attitude is basically valid and justified.

As Chairman of the Board of Governors of Wayne State University and a member of its Medical School Committee, I am conscious of the tremendous expansion we need in medical education if we are to overcome the growing physician shortages and build for the increasing complexity of medical practice tomorrow. The huge increase in the cost of modern medical education has outrun the traditional sources of financing. Foundation and corporate donations are inadequate. Passing the hat in the profession has been ineffective. It is increasingly difficult to get needed help from local and state governments. There has been no real resolution to the problem of how to finance the essential expansion of our system of medical education.

Obviously, substantial federal help is needed. From opposition to federal construction grants, the medical profession has come to acknowledge their necessity. Federal funds are needed, not only for construction of new and enlargement and renovation of old schools, but for operating costs. A greatly strengthened scholarship program is needed. Indeed, because the period of a physician's training is so prolonged, far more adequate stipends must be provided up through internship and residency.

Labor and other segments of the population will support substantial federal financing for the extension of medical education. To get such help, the leaders of medical education must make their needs fully and clearly known to the nation. But with increasing public support, medical education would be expected to assume a broader social responsibility in the advancement of medicine beyond the traditional training of health personnel. The public would expect enlarged efforts to study and develop techniques for providing the kind of care the public wants, to define functions and standards, to demonstrate what can be provided and explore how it can be done.

There is another whole series of problems related to the organization and administration of medical care services. My experience on the Executive Committee and in planning activities with the Detroit Area Hospital Council has brought home to me the fact that we have come nowhere near attaining a rational pattern or organization for our hospital system. Adequate regional organization would provide for sharing rather than competition over facilities, and it would provide for the integration of educational and consulting services that would result in full participation of all hospitals in an area, starting with the basic community institution and running clear up thorugh a hierarchy of increasingly complex and specialized institutions to the level of the university hospital.

The prevalent organization of medical practice is much further in arrears. At best it may have been appropriate 50 years ago when there was practically no specialization and each physician could practice more

or less independently. Organization of medical practice has never developed to the extent demanded by the tremendous growth of specialization. In spite of many authoritative recommendations for a needed integration of medical practice, and in spite of inspiring instances of group practice exemplifying the best medicine thus far attained, necessary changes in organization have often been repressed to daydreaming or to inching forward fearfully.

Changing responsibility of education

I raise these difficulties not to nag about them. Many of them have been with us for a long time. Some will continue irrespective of what we may do. But, they ultimately come home to medical education. Turning out a well-trained physician is an extremely difficult and complex job, but to produce a trained scientist with clinical experience and a contemporary healer of the sick is not enough. The new doctor can count on a very substantial change from the present pattern of medical practice. He will be dealing with a constantly changing profile of disease. He will be facing steady upgrading in the standards of practice that the public learns to expect from physicians. He will some day meet up with what Osler has called the medicine of the future, the maintenance of the health of people who are well. He will practice in closer concert with other professions. He will see basic changes in medical economics and health insurance. He will unquestionably encounter continuing changes in the organization of health care.

Thus in addition to what the medical student is already being taught, he must be prepared with a thorough grounding in medical economics. The workings of voluntary health insurance and other organized medical care programs will become just as important to him as some clinical studies. He must get a deeper exposure to the team aspect of the practice of medicine. He must learn in a practical way how to work with groups of people in meeting their total health needs—the maintenance of health and rehabilitation as well as the treatment of episodic illness. He must receive as strong as possible a commitment to preventive medicine.

Group practice prepayment programs are in the forefront of evolutionary change in medical practice, employing more advanced principles of payment and of organization and actively pursuing prevention. Medical education and group practice prepayment can both gain by pooling their needs and resources. Throughout the country, medical schools are suffering from a drying up of the sources of clinical teaching material. Many people formerly in the charity wards are now private patients. The school needs to tap a new reservoir of patients. Involvement in a direct service program would enable the medical school to begin dealing with the total health maintenance needs of people. It would involve continuing health care for a whole group rather than one-time contact

with a series of patients who come for the treatment of one specific illness or disability. It would expose students and faculty to a new environment in which the economic barriers to medicine are minimized. In such a new setting the physician would be working, not with a compliant charity case, but with a patient who is paying his own way and who must be treated with appreciation for his dignity.

Obviously, today the development of group practice prepayment programs is not widespread. But the tide is changing. In Detroit, a new program initiated by our union is now joining the ranks of such existing plans as Health Insurance Plan of Greater New York, the Kaiser Plan, and others. In city after city, there is growing interest on the part of existing groups of physicians and of consumers. Our union receives numerous requests for financial and technical help to start new direct service programs.

In addition to the Auto Workers, there is a growing and more concrete commitment to group practice by Steel Workers, Machinists, and other labor groups. The Mine Workers have a large program in operation. The growing labor involvement in health care will unquestionably result in the establishment of some new programs. The question is, what will be their involvement with medical education?

I have long felt that these programs could greatly benefit by—that they need—a close association with medical education. The Community Health Association in Detroit would welcome a direct affiliation with a medical school. I am convinced that labor in many communities would respond to leadership from a medical school to develop and finance one of these new types of programs. Union people are looking for good medical care and know that it can be furnished in the medical school and in the teaching hospital. In this, I don't think unions stand alone. I am sure they would be joined by employers, that neither one would be after bargain basement prices or cut-rate service but would be willing to pay full price for good care. This activity must, of course, be kept in scale. The furnishing of service to such a group should not be allowed to interfere with the primary job of medical education. But I am sure that the injection into medical education of a reasonable caseload of this character would be of great mutual benefit. The advantages are indeed so evident that rather than plead for such a step I would hope we could soon discuss how to do it.

Training tomorrow's doctors

Some in medical education may feel that training a good clinician alone is now a nearly overwhelming task and completely discharges the responsibility of the school. Others, however, accept the desirability and even the necessity for bold innovation. But, too many educators are trying to buy their peace with organized medicine and the business of medical practice. They will not go into competition with fee-for-service

solo practice. They have made too many compromises on noneducational grounds.

The physician in private practice has his proper place on the medical school faculty, but it is not consistent with the objectives of medical education that large numbers of part-time clinical teachers should be using the medical school as a way to enhance a lucrative referral practice. The methods adopted for compensating full-time faculty usually reflect the economic prejudices of the local profession rather than the needs of the medical school. It is not proper to use interns and residents as helpers to physicians in private practice instead of giving them a meaningful education experience. Only slowly are we developing the full-time staff that is needed in teaching hospitals for proper intern and residency training.

I recognize that medical schools must seek a degree of harmony with medical practice as it exists today, but they are also obligated to train tomorrow's doctors. Their objective must be to advance the general welfare of the community and of the medical student rather than to reinforce an already high degree of conformity with the profession. The organized profession has not always been right in its concepts of medical organization and payment. On the contrary, the record has been one of resistance and obstruction. These tactics have frequently been successfully challenged in the courts, in the halls of Congress, and in the legislatures. By the tide of events more than one medical society has had to accept developments that they originally opposed.

I really cannot assess the extent to which you in medical education can accept these challenges. But the doctor cannot escape his destiny and medical education cannot escape responsibility for preparing him to deal with the proliferating problems of tomorrow. Demands for more and better medical care, for increased medical productivity, for the rational regional organization of hospitals, for the modernization of medical practice, and for better health insurance, will be crowding in on medicine from all sides. Social forces are in operation that will make these demands effective. The question is: will medicine and medical education be able to cope with these problems, much less offer leadership in their solution?

To do this it is imperative that the doctor take a new look at the society in which he lives and practices. America has not gone socialistic or insane in its pursuit of security. Dr. Lindsay E. Beaton, president of the Arizona Medical Association, has said:[3] "There is potential disaster for the profession in identification with the ultraconservative."

The doctor must come to learn that most Americans, including the leaders of both political parties, regard the Social Security System, with its disability benefits and its payments to widows and retired workers, as a perfectly natural and positive development in an expanding indus-

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[3] Beaton, Lindsay E., "A Doctor Prescribes for His Profession," *Harper's Magazine* 221, October 1960, pp. 151-2.

trial society and not as a "foot in the door toward socialism." In any event, if the physician is going to throw the term "socialism" around, he must learn its real definition, and stop labeling anything that threatens the status quo as "socialistic." He must realize that labor unions are necessary economic instruments, that they have made tremendous contributions toward the welfare of the working man and the general economic welfare, that they are firmly based in law, and that they are accepted as a legitimate and constructive institution in our free society. He must become politically sophisticated enough not to put himself into the isolated position in the eyes of America and the world that the American Medical Association backed into by its campaign for the Bricker Amendment.

The physician must come to understand why so many older people want health insurance for the aged included in Social Security and why their children, too, support such legislation. He must appreciate the reasons why the working man gets alarmed at the rapidly rising costs of medical care and health insurance. He must come to evaluate objectively the contributions in leadership and ideas that are flowing into medicine and health insurance in a great stream from science, labor, and the business community.

A common challenge

Medicine is not the only field in which a sense of crisis calls for positive leadership. Crises are arising on many fronts and in many professions, and this is only one aspect of the vast adjustment that the world must make to the new technology and advances in science and knowledge. Politicians, businessmen, professional people, labor and religious leaders, and indeed everyone, live in a rapidly changing world. Even in America situations related to our own development are not unlike the overwhelming pressures that exist in the new emerging nations in Asia and Africa, which are pressing for massive and decisive progress.

Any responsible community leader feels the pressures of the crises in leadership. New challenges need the exercise of new powers. If medicine is to go forward and take its proper place in these times, it must face its destiny and deal with problems that are not merely difficult but well nigh overwhelming. It is our common predicament, our common challenge.

B. Comprehensive Care Through Insurance Plans

BY DAVID PRESWICK BARR

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Plans for providing comprehensive care through insurance are transforming the pattern of medical practice. They now provide medical care for large segments of our population and are being rapidly extended to cover the needs of more of the people. They have been developed by free enterprise largely through the initiative of community leaders. They have received little guidance from leaders of medical schools and teaching hospitals who in their instruction have continued to prepare students for the traditional solo fee-for-service practice. Although the plans have been developed outside of teaching institutions, new and unsolved problems of medical education have arisen because of their development, in some instances prejudicing the availability of teaching material in the wards and requiring additional money for the support and staffing of outpatient departments. Closer relationships among medical schools, teaching hospitals, and plans for comprehensive medical care could aid in the integration of schools with their communities, in the staffing and equipment of adequate outpatient departments, in providing first-hand participation by students, interns, and residents in organized group effort and practice, and in providing facilities for training and preparation of family physicians who will later become part of a group-practice team. Possibilities for establishing such relationships should be explored by all schools as an aid in preparing their graduates for the medical practice of the future.

THE PROFOUND changes that have developed in the pattern of American medical practice during the past quarter-century have been the inevitable outcome of realization that people in this country should benefit from all modern science can offer, at a cost they can afford, and the further realization that the prevailing organization of practice has been inadequate to accomplish the purpose. It is now well recognized, not only that no solo practitioner of medicine can by his own unaided efforts bring to his patient everything he needs, but also that unorganized efforts of many doctors in the care of a patient may be cumbersome, inefficient, and very costly. The complexities and potentialities of medical care have led to the development of an increasing number of specialists and superspecialists, and at the same time to an alarming decrease in the number of appropriately trained family doctors. Under these conditions the cost of fee-for-service care during catastrophic or prolonged illness has defied ordinary budgeting. Even a shorter illness has often brought enduring financial hardship to a family.

For correction of these deficiencies and the achievement of ideal medical care, a multitude of schemes has been devised. Although plans for health care have varied greatly, they possess many features in common. Most of them have been based on the principle of prepayment by insurance for some part of the cost of illness. Many have featured organized group practice and use of common facilities. Usually prevention of disease and maintenance of health have been emphasized. Although many have adopted the principle of indemnity payments with agreed schedules for each service, some of the plans have attempted to offer comprehensive care in office, home, and hospital with payment of physicians by capitation and without extra charges to patients for individual services.

Most of the plans have been developed independently through the initiative of leaders in the community, industry, unions, or cooperatives. They have been representative of the wish of the American people to accomplish desirable ends by free enterprise and to avoid the governmental control that has all but replaced individual medical practice in most of the countries of the Western world.

Almost invariably the plans have at one time or another met with the determined opposition of organized medicine and have been distorted or deformed in their development and organization by the insistence of practicing doctors on the sanctity of traditional practice, fee for service, solo effort, unlimited choice of physicians, freedom from supervision, and the other shibboleths of the nineteenth century.

Unfortunately, medical schools and teaching hospitals have contributed little to the development of the plans. If not opposed, they have remained aloof. As a result, little help has been given by teachers and leaders of medicine who could have aided from the start in selection of personnel and perfection of organization.

It is historically significant that in the early days of the movement efforts were made to integrate health plans with medical schools and teaching hospitals. When the Health Insurance Plan of Greater New York (HIP) was started in 1947, a proposal to sponsor a group was made to each of the medical schools in the metropolitan area. The idea was considered seriously by two. In one, the proposal lost by narrow margins when submitted to the medical board of the hospital and to the executive faculty. In the other, a group or partnership of physicians was actually formed in association with the school, but this was soon abandoned because of criticism by the county medical society and particularly by alumni of the school, who saw in the innovation a threat to their financial welfare and their way of life and practice. In this school, as in many others, even a little pressure from medical alumni and medical societies was enough to persuade a faculty brought up on nineteenth century patterns and following them in their daily work that innovations might threaten them personally, that they might impair the time-honored doctor-patient relationship, and might even be precursors of the socialization of

medicine and government control. Even though some individuals might entertain more liberal thoughts, they were hesitant or unwilling to advise participation of the school or its graduates in a new and relatively untried scheme. As a result, this medical school, like so many others, remained and has continued to remain aloof and detached from some of the obvious social changes about it.

At Montefiore, a hospital of the highest quality but not intimately associated with a medical college, a group of physicians was formed to care for subscribers of the Health Insurance Plan. Unfortunately, the program has not as yet been integrated with the experience either of medical students or of interns and residents. Its adoption as an integral part of a great hospital has, however, given this group of HIP a special character, has lent prestige to the Plan, and has been helpful in the recruitment of desirable physicians.

In spite of the opposition of organized medicine and the apathy of medical teachers, health insurance for comprehensive medical care provided through group practice has continued to grow. Three-quarters of the population carries some form of hospital insurance. More than one-half are protected against some part of the cost of physicians' care.

Recent growth of prepaid group practice plans

Group practice is extending rapidly. According to Pomrinse and Goldstein, whose preliminary report was distributed to participants in this Institute,[1] the number of groups has increased more than 300 per cent since 1946. Comprehensive care plans have prospered. The Health Insurance Plan of Greater New York, developed with municipal backing in 1947, now offers through 32 affiliated partnerships of physicians comprehensive medical care, including home, office, and hospital attention, to almost 600,000 people. The Permanente in California, established as a matter of expediency during wartime by management under Henry Kaiser, has an even greater enrollment and has recently extended its operations from the West Coast to Hawaii.

Many unions have developed group practice with the support of welfare funds. The United Mine Workers support ten fully-accredited hospitals and pay the salary of 150 full-time specialists and general practitioners. They operate in 26 states and conduct three schools for the education of professional and practical nurses, medical technicians, and nurse anesthetists. Last year they spent over $61,000,000 for hospital and medical care benefits. To 80,000 people they gave about 1,300,000 days of hospitalization. Their physicians gave approximately 2,500,000 physician services in office, hospital, and outpatient department. The Community Health Association of Detroit is being organized for the United

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[1] In *The Dynamics of Medical Care*, a workbook for Institute participants. See the expanded discussion in Chapter 9, Section A, of the present volume.

Automobile Workers with similar intent. Difficulties with the local profession, the county medical society in Detroit, and the hospitals have delayed but not stopped its development.

There are many smaller but similar enterprises that provide comprehensive care on a prepayment basis. The Group Health Association of America has 24 regular member organizations and 49 associate member organizations, and these include only a part of the group-practice plans. It has been estimated that, on the average, about one in 40 individuals in this country is covered by an inclusive type of prepaid medical care plan. The extent of participation in these plans varies greatly in different parts of the country. In Greater New York one in every 16 individuals and in Staten Island one in every 10 is covered by HIP for comprehensive medical care.

These patterns of medical practice can no longer be regarded only as possible future developments. They are realities and they are here. The development of the programs, while still imperfect, justifies some prediction concerning the pattern of practice for the not distant future. If government does not assume reponsibility for the practice of medicine, it may be safe to say that medical care will be conducted by organized groups of physicians on patients who have budgeted their health costs through some form of insurance, that the services will be comprehensive and will have as one of their primary aims the prevention of disease, that as in the past the family physician will be the key figure, and that he and the pediatrician will render most of the requisite services.

Continuing need for the family physician

During this metamorphosis in practice, medical schools and teaching hospitals have pursued their traditional course of training men for the practice of the late nineteenth century. At a time when the content of medical teaching has changed phenomenally with the progress of science, the teachers have continued to let their graduates believe that they will practice as their fathers did, that they can go it alone, that they will give their services to the poor and will collect what they can from the affluent, that they will serve their patients without supervision or scrutiny. Medical schools have continued to aid in the fragmentation of medicine by training more and more specialists and superspecialists with little regard to the specific needs of the high proportion of their graduates who will become family doctors. Schools have seldom integrated training with the needs of the country as a whole or even of the communities they serve.

This course has been pursued in spite of the realization by most teachers that the family doctor is still the key figure in medical practice. In spite of widespread agitation for more adequate training of family doctors, there are few adequate programs for training. The lack is more deplorable because, I believe, it is now apparent that specialist training does not prepare a man well for family practice. This is true even of the

internist who by long habit in thorough examination, deduction, record keeping, and diagnosis should be perhaps the best fitted. Experience has shown, however, that in our best hospitals the man trained in internal medicine may have been permitted to regard himself as a future consultant, who as such will naturally deal with difficult problems of diagnosis and will escape the drudgery of continuing office care and home calls for humdrum illnesses. In a hospital of the best quality it is truly difficult to locate doctors who will take care of families or who will be available for any except grave emergencies on nights, holidays, and Sundays.

The Health Insurance Plan of Greater New York requires many family physicians to cover the needs of the immense congested area of the metropolis. Specialists may be recruited with little difficulty. Family physicians, the key to the whole concept of comprehensive care, are hard to find and when found are often not well prepared to assume their crucially important functions. In setting its standards for the recruitment of new family physicians, HIP has required Board eligibility in internal medicine as a qualification. But when these men actually become a part of the organization, their colleagues find that they may be less fitted for family practice than some of their less trained associates. Not only do these physicians find the drudgery of family practice galling, but also they are ill-prepared by previous experience to perform many relatively simple tasks that should not necessitate the loss of time entailed by reference to a specialist. This may lead to unnecessary overuse of other members of the team and may contribute to the complexity and expense of medical practice.

Impact of prepaid health plans on medical education

While the teaching hospitals have in general contributed little to the development of new forms of practice, they have not remained unaffected by the social changes about them. The hospitals have seen the population of their teaching wards, the mainstay of clinical instruction, transformed sometimes to the point of inadequacy. Beds formerly occupied by the medically indigent are filled by patients whose health insurance entitles them to the care of private physicians. Advances in therapy, particularly through antibiotics and chemotherapy, have diminished the number of acutely ill patients in the wards. Chronic diseases of an aging population now account for a disproportionately large number of the available hospital beds.

These factors have necessitated the use of outpatient department facilities as ancillary units for clinical teaching and have given rise to many new and perplexing problems. The old service type of OPD may have been little more than a dispensary or emergency station, little fitted to serve as an example to students or to provide them with the essentials of modern office and home care. Too often it was spatially inadequate even for elementary diagnosis and temporary treatment. Its staff was usually

composed of practitioners who had limited time to spend in their hospital duties and who operated not as part of a team but as individuals. Furthermore, the clientele of the old OPD was heterogeneous, drawn from a wide geographic area, a circumstance which afforded little opportunity for follow-up or continuity of service. Home care was almost nonexistent. Practice of preventive medicine was elementary and seldom, if ever, exemplary. Teamwork was hampered by extensive departmentalization and relative indifference of many of the necessary participants to the purposes of group practice.

These difficulties were intrinsic and have with great effort been only partially and irregularly corrected. In a few places, such as Cornell, Colorado, Pennsylvania, and North Carolina, brave efforts have been made, usually with generous support from foundations, to carve out of initial chaos effective units for the practice and teaching of true group practice and comprehensive care. The efforts have been extremely rewarding as pioneer experiments in which both the advantages and the difficulties could be evaluated by careful sociological and medical study.

It cannot be claimed, however, even by the most enthusiastic proponents that any of the experiments should as yet be regarded as exemplary. The essential disunity of prevalent clinic practice has hampered any true cohesion in group practice, and the heterogeneous character of the clinic population has made many of the efforts to practice comprehensive medical care seem artificial to both instructors and students. Furthermore, the establishment of a clinic for comprehensive medical care, even in its imperfect first stages, has been found to be an expensive venture. Conversion of space in already crowded quarters may be required. It may be necessary to engage specially qualified teachers. Careful evaluation to assess validity of effort is indicated. Foundation support has usually been necessary.

Every school today is faced with the problem of supporting from endowment an outpatient department teaching enterprise that is worthy of the attention of students, interns, and residents. It is the declared purpose and function of medical schools and teaching hospitals to prepare their graduates for the practice of medicine in which about 90 per cent will soon be engaged. It is more than doubtful whether present arrangements of ward and OPD teaching are adequate, or even in the right direction, to portray the realities and true values of the best twentieth century practice. Indeed, it is doubtful whether students and interns can be prepared for the type of practice they will actually encounter without active participation in such a practice under the guidance of teachers who themselves are acquainted with its problems.

Need for integrating prepaid group practice plans with teaching

In seeking a solution for some of their outstanding problems in the instruction of medical students and the training of interns in twentieth

century practice, medical schools and teaching hospitals would do well to reconsider their attitude toward group practice plans supported by insurance and offering comprehensive medical care. The plans are now better established and have much more to offer than they did in 1947. It cannot be said that opposition to them by county medical societies and alumni has disappeared or notably weakened. At present, however, the medical school may need an affiliation with a group practice plan as much as the group practice plan needs the advice and help of medical teachers. There is a question whether under these circumstances the schools should be so governed by the fears of their graduates as they were in 1947.

Integration of a comprehensive medical care program supported by prepayment with a modern teaching institution constitutes an almost entirely unexplored relationship.[2] I believe that assumption by a medical school and teaching hospital of the care of an insured population living in the immediate vicinity of the institution could offer a most interesting adventure in medical education. Not only could premiums paid by subscribers aid in the staffing and equipment of an adequate service, but other potential advantages of such an association are numerous:

1. It might enable the school to integrate itself closely with its own community and the community facilities.
2. It would provide first-hand participation of students, interns, and residents in organized group effort.
3. It would provide ideal facilities for training and preparation of family physicians who will later become part of a group practice team.
4. It would enable the institution to retain geographically valuable instructors to amplify the efforts of part-time practitioners for teaching on ambulant as well as bed patients.
5. Finally, it would lend guidance and dignity to an organized effort to provide the best type of medical care.

The type of plan that could be utilized in this way in a medical school environment need not be too carefully defined. It is quite possible that in some areas where a medical school is closely associated with a university, the student health service might furnish an admirable beginning. In California, association of a school with some segment of the Kaiser Permanente Plan might be contemplated. In Greater New York, the assumption by a medical school of responsibility for a segment of the

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[2] Since this paper was written, announcement has been made by Dr. Ralph E. Snyder, dean of the New York Medical College, of the first comprehensive medical care program in the United States to be sponsored jointly by a medical college, its teaching hospitals, and a labor-management fund. The program is a five-year agreement providing home, office, and hospital medical care for the hotel industry's employees and their families in New York City. Sponsors are the New York Medical College, Flower and Fifth Avenue Hospitals, the New York Hotel Trades Council (AFL-CIO), and the Hotel Association of New York City.

subscriber population served by the Health Insurance Plan of Greater New York might be considered.

It would be vain at present to seek a plan that offers perfect conditions of practice. All of the existing plans have grown up under difficulties and no one of them can be represented as an ideal partner to a medical school. It is reasonable to expect, however, that the influence of a medical school and teaching hospital and the guidance which experienced teachers could offer might correct many initial difficulties. Such an experiment in education is long overdue and could be very instructive.

CHAPTER 9

The Organization of Medical Services

A. Group Practice in the United States

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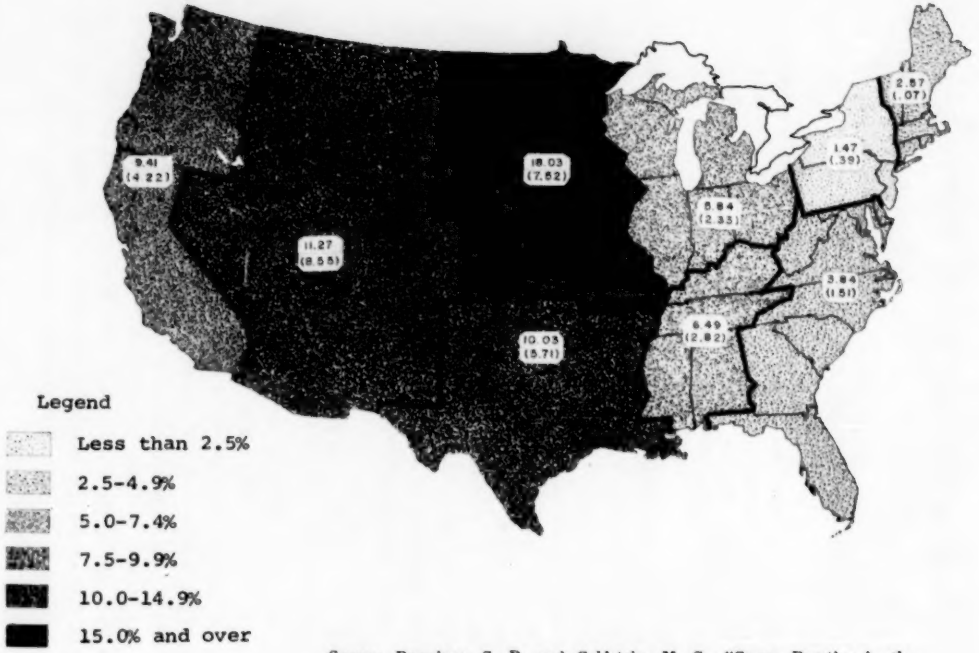
Group practice as a medium for providing medical services is growing. Understanding this development can be enhanced by study of results of U. S. Public Health Service surveys dealing with the personnel and geographic distribution of medical groups.

CHANGES IN THE ORGANIZATION of medical practice have been especially apparent since World War II. The growing complexity of the technology of medicine has led to an increasing number of more highly specialized practitioners. At the same time the need for a reintegration of care given to the individual patient is generally recognized. Various educational experiments at both the undergraduate and graduate levels have been developed in an attempt to bring about the resynthesis of medical services. Another approach to this problem has been the effort to structure the skills of individual physicians, representing several fields of medicine, into a single organizational unit which can provide integrated medical care. One expression of this is the manner of organization of the medical staff of hospitals. Another, emphasizing ambulatory care, is medical group practice.

Group practice as a form of medical organization has been the subject of a number of studies, especially since about 1930. In 1959, the U. S. Public Health Service undertook a comprehensive mailed questionnaire survey of medical groups in the country in order to fill an evident need for more current and detailed data on this form of medical organization as well as to develop a time trend in the field. This latter objective is possible because the methodology of a 1946 Public Health Service survey of group practice could be utilized and much of it repeated. Personnel who had participated in the earlier survey were available, either as active participants or as consultants.

The definition of group practice used in both Public Health surveys

*This brief review is based on the following three reports by the authors: (1) "Group Practice in the United States," *Group Practice* 9, 1960, pp. 845-59; (2) "The 1959 Survey of Group Practice," *Am. J. Publ. Hlth.* 51, 1961, pp. 671-82; (3) "The Growth and Development of Medical Group Practice," *JAMA* 177, 1961, pp. 765-70. Dr. Pomrinse is at present Associate Director, Mount Sinai Hospital, New York City.



Source: Pomrinse, S. D. and Goldstein, M. S., "Group Practice in the United States," *Group Practice* 9, November 1960, pp. 845-59.

FIG. 9.1.—Physicians in full-time group practice as a per cent of total active physicians in private practice, by region in 1959 (1946 in parentheses).

TABLE 9.1
NUMBER OF MEDICAL GROUPS AND FULL-TIME GROUP PHYSICIANS IN UNITED STATES (1959 AND 1946)

Groups and physicians	1959	1946	Ratio of 1959 to 1946 (1946=1.0)
Medical groups	1,154	368	3.1
Full-time physicians in medical groups	10,032	3,084	3.2

was: "Medical groups of three or more full-time physicians formally organized to provide services in more than one medical field or specialty, with income from medical practice distributed according to some prearranged plan." There are also many formally organized groups of physicians who practice a single specialty only; other groups have less than three full-time physicians, utilizing a number of part-time physicians. Such groups are not included in this discussion since they do not meet the definition given above.

Group practice, it might be mentioned, is occasionally erroneously used synonymously with prepayment of medical care; plainly, the first deals only with method of providing medical care (a *group* of physicians), whereas the second is concerned with the method of payment.

Growth of group practice

As Table 9.1 shows, there has been a striking increase—a little more than three-fold—in the number of medical groups and the number of full-time physicians practicing in groups between 1946 and 1959. Although the rate of growth has, of course, varied in different parts of the country, growth has taken place in all but five states of the union.

As a percentage of all active physicians in private practice, full-time physicians in medical groups as here defined increased from 2.6 per cent in 1946 to 6.3 per cent in 1959. The national figure, 6.3 per cent, masks the fact that group practice is very common in certain parts of the country. This is indicated in Figure 9.1 by regions, and in Figure 9.2 by states. Thus, the number of physicians in full-time group practice as a percentage of all private physicians in active practice reaches a high of 52 per cent in North Dakota and is as much as 35 per cent in Minnesota.

The trend toward group practice by young physicians especially is also suggested in the results of an inquiry to 459 interns and residents about their future plans: 36.2 per cent of these young physicians stated partnership or group practice as their preference.[1]

Medical groups are both an urban and a rural phenomenon. In 1959, for example, 41.6 per cent of the groups were located in metropolitan counties and 36.5 per cent were located in isolated semirural counties.

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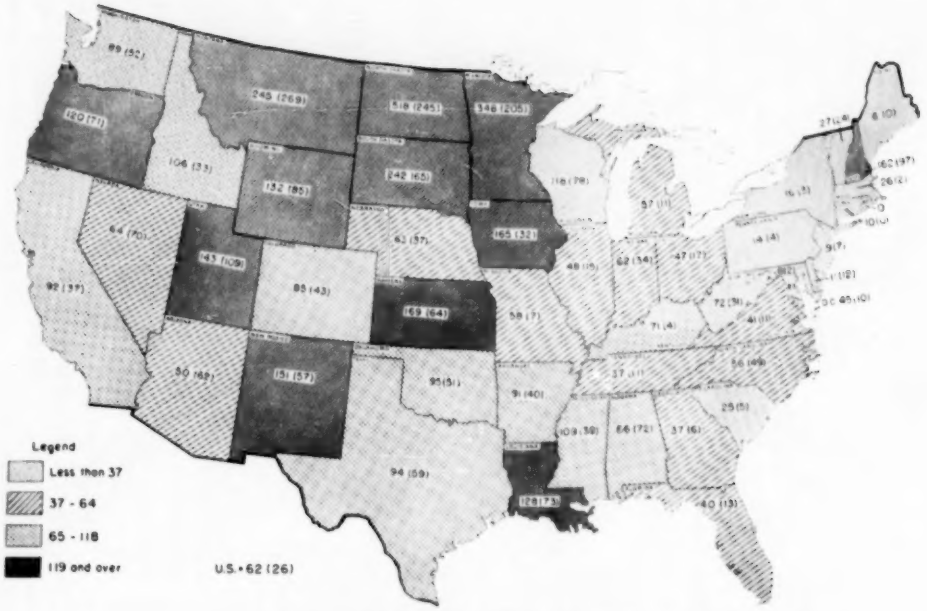
[1] Hoffman, Lois, "Is Solo Practice Done For?" *Medical Economics* 37, 1960, pp. 143-8.



Source: Pomrinse, S. D. and Goldstein, M. S., "The Growth and Development of Medical Group Practice," *JAMA* 177, September 1961, pp. 765-70.

FIG. 9.2.—Physicians in full-time group practice per 1,000 total active physicians in private practice in 1959 (1946 in parentheses).

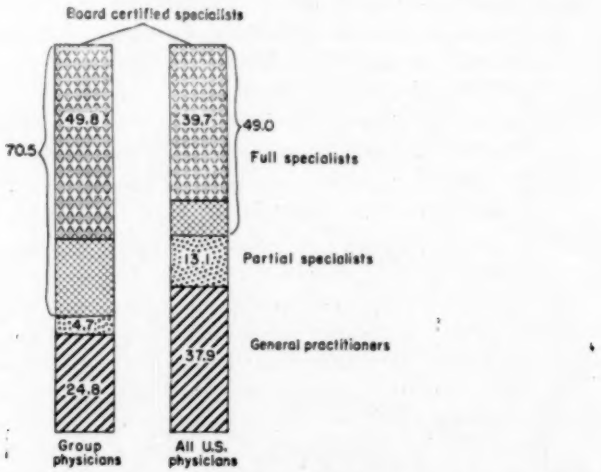
In 1959, as in 1946, most of the groups had from three to five physicians (57.2 per cent of all groups in 1959). The smallest groups tended to be the ones most recently organized. Large groups (16 or more full-time physicians) increased from 8.4 per cent in 1946 to 11.1 per cent of the total number of groups in 1959. The average number of full-time physicians per group in 1959 was 8.7.

Organization and scope

In 1959, 86 per cent of the groups were organized as partnerships. Many of these partnerships, however, also employ physicians. In 10 per cent of the medical groups, all the physicians in the group were employed. A little more than half of the latter groups were organized as "associations." The remainder included groups in which physicians were employed by a sponsoring agency such as an industry, foundation, hospital, trade union, medical school, or a consumer cooperative.

Of the 1,154 groups, 9 per cent reported affiliations (in descending order of frequency) with industry, medical schools, prepayment plans, labor unions, consumer cooperatives, hospitals, and foundations. Relatively more of the larger groups cited such affiliations than did the smaller ones.

Figure 9.3 shows the percentage distribution of physicians by degree of specialization among those in full-time group practice compared with those in private practice in 1959. As might be expected, a much higher proportion of physicians in group practice than in solo practice were full



Source: Pomrinse, S. D. and Goldstein, M. S., "The 1959 Survey of Group Practice," *Amer. J. Publ. Hlth.* 51, May 1961, pp. 671-82.

FIG. 9.3.—Percentage distribution of physicians by degree of specialization: total physicians in private practice and physicians in full-time group practice, 1959.

specialists. On the other hand, it is worthy of note that one-quarter of the physicians in group practice were general practitioners.

The entire spectrum of medical specialities is to be found in medical groups. There was a concentration of general practitioners in the smaller groups and of internists in the larger groups. Surgeons represented about 15 per cent of all full-time physicians in the groups regardless of the size of the group. Few pediatricians were found in the smallest groups, but they represented a significant proportion of the physicians in groups of six or more full-time practitioners.

Practically all the medical groups are engaged in providing at least some general medical care. Less than 2 per cent of the groups stated that they provide only consultation, referral service, and/or diagnostic service. The larger, more than the smaller groups, reported that a substantial part of their activity is in these latter categories. In groups of all sizes, 13.4 per cent reported that a fifth or more of their activity is in consultation or referral services, and 3.2 per cent indicated a fifth or more of their activity is in diagnostic service. Similar results were found in 1946.

Sixty-three per cent of the medical groups reported that they have a formal method of maintaining the quality of care. The smaller groups emphasize time off for refresher and postgraduate courses and regular staff meetings. The larger ones more frequently participate in teaching of medical students, interns, and residents and attach importance even more frequently to regular staff meetings.

The income of 336 full-time physicians for 1959 was obtained from 19 medical groups. Based on these data, several noteworthy observations may be made. These observations must be considered tentative, in view of the small number of medical groups represented:

1. The median net annual income of partners in medical group practice is similar to that found for a general sample of male, self-employed specialists in partnerships in 1959.[2]
2. The average income of physicians, within a group and as between different medical groups, may vary considerably.
3. The general practitioner in medical groups, perhaps by virtue of his partnership status, earns as much as the specialist, on the average.
4. In group practice, the earning capacity of the physician, on the average, tends to remain at its peak even in the older ages.

In summary, it is evident that group practice as a medium for providing medical services is finding increasing acceptance by the medical profession and the public, particularly in certain sections of this country.

In this connection, it may be noted that approximately half of the medical groups (48.3 per cent) planned to add a total of 1,027 physicians to their staffs in 1960 (which would mean a 10 per cent increase in the total number of full-time physicians in group practice). This number corresponds to almost 15 per cent of the graduating medical student class at this time.

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[2] "How Your Earnings Compare," *Medical Economics* 37, 1960, pp. 38-47.

B. Organized Medical Service and the Common Law

BY JOHN F. HORTY

Associate Professor of Law and Director of the Health Law Center, University of Pittsburgh Graduate School of Public Health

The problems of the corporate practice of medicine are raised by judicial interpretation of certain language contained in the medical practice acts. In order to understand interpretations of the medical practice acts which have occurred, the background and original purposes of the acts must be examined. Considerable corporate practice of medicine presently exists and is tolerated. Laws have been passed in several states which permit physicians to incorporate and to practice medicine as corporate employees. Thus, an evolution in thinking with respect to certain aspects of corporate practice is occurring and this evolution is and will continue to be manifested in legal changes.

Introduction

BEFORE SPECIFICALLY DISCUSSING the legal background of organized medical services, I should like to make several general comments respecting law as a social instrument and its operation in American society. These general comments are particularly pertinent to the medical practice acts and the problems these acts raise concerning the practice of medicine.

It is important in order to understand our legal process to comprehend that growth and change are really the stuff and substance of the law. Put delicately, the law grows. Put frankly, the law changes. The presence of jurisprudential growth and change is a difficult concept for many nonlawyers and lawyers to grasp. Often the law is thought of, even by some who should be better informed, as fixed and knowable, immutable and unchanging, designed to be applicable to situations that arise in the future in precisely the same manner as to conditions existing when the law was promulgated. Yet it is impossible that the law, a product of human minds, will have greater foresight than the human minds who created it.

In fact, the law is continually evolving to meet changing circumstances and changing social conditions. And this evolution occurs in the decisions handed down by courts and tribunals,[1] as well as in statutory law which, by its nature, is subjected to annual or biennial review, addition, and amendment by the legislature. The strength of our legal system, perhaps the basic reason for its endurance, is its ability to adapt itself to change as change occurs in society. Yet the law, while it may sometimes precede

[1] There is considerable technical argument in legal circles as to whether judges make laws or whether they merely examine and interpret laws to determine whether they are applicable to the controversy before the court. Certainly, judges make law in the sense that the very process of interpretation can often enlarge or contract the boundary of a law's applicability to a certain factual situation.

at a measured pace the thinking of society, is often a reflection of it, so that changes in the thinking of society will generally precede or be mirrored in legal change.

The problems of the corporate practice of medicine, as we shall consider them, are raised by judicial interpretation of certain language contained in the medical licensure statutes, or as they are popularly known, the medical practice acts. An evolution in thinking with respect to certain aspects of the corporate practice of medicine is presently occurring, and this evolution will continue to be manifested in legal changes. Major changes may occur through enactment of new legislation to amend or replace definitions and theories no longer applicable to present social and economic conditions, thus creating new criteria for judging the various forms of organization of medical practice.

However, the ability of our legal system to evolve is also marked in the common law. The term *common law*, is meant to refer to judicially decided law, law created as the result of court decisions. Thus, changes in corporate practice rules could occur without any alteration in the existing language of many of the medical practice acts, but rather by a reinterpretation of the language of the acts. Evolution of decisional law is slow and sometimes cautious, but it constantly occurs. This is another unique feature of our legal system: the existence of a real genius in adapting old containers to carry new and dynamic ideas. An excellent current example of this phenomenon is the evolution in application which has taken place with respect to the Fourteenth Amendment to the United States Constitution[2] since its passage 80 years ago. It is difficult to believe that those who framed and adopted this provision envisioned its application, in 1954, to the problem of segregation in public schools.[3]

At any point in time, decisional law attempts to strike a balance of some sort between two desired goals, predictability and flexibility. It is essential that the law have flexibility, that it evolve. At the same time it is essential that, within limits, those who are governed by the law are able to find and rely upon the law applicable to their conduct. The relative amount of emphasis given these two goals is in continual change. At times an area of the law is relatively static, at times it is in the throes of re-evaluation.[4] I believe that in the area of the organization of medical services the need for re-evaluation, for change, is at least temporarily triumphing over the coexisting need for predictability.

Background of the medical practice acts

Typically, statutes exist in each state for the purpose of licensing persons to practice professions or businesses and trades. Applicants may

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[2] Specifically, that portion of Section 1 of the Fourteenth Amendment which states that no state shall "deny to any person within its jurisdiction the equal protection of the laws."

[3] Brown v. Board of Education of Topeka, 347 U.S. 483 (1954).

[4] See generally, Holmes, Justice Oliver W., *The Common Law* (1881).

generally be licensed to practice law, architecture, medicine, nursing, and to become barbers, beauticians, etc.[5] Licensing acts set qualifications which applicants for licensure must fulfill and generally provide for examination of the applicant's competency. The medical practice act, which licenses physicians to practice medicine and surgery, is normally only one of a group of acts pertaining to the practice of professional or business activities.

The most pertinent part of most medical practice acts, with respect to issues of corporate practice, is that section of the statute which prohibits practice of medicine without a license. Language typical of such provisions is that found in the Pennsylvania Medical Practice Act, enacted in 1911.[6]

> §401a *Practice of medicine and surgery without license prohibited; penalties*
>
> It shall not be lawful for any person in the State of Pennsylvania to engage in the practice of medicine and surgery, or pretend to a knowledge of any branch or branches of medicine and surgery, or to hold himself or herself forth as a practitioner in medicine and surgery, or to assume the title of doctor of medicine and surgery or doctor of any specific disease, or to diagnose diseases, or to treat diseases by the use of medicines and surgery as defined in section 1 (c) of this act or by any other means, or to sign any death certificate, or to hold himself or herself forth as able to do so, excepting those hereinafter exempted, unless he or she has first fulfilled the requirements of this act and has received a certificate of licensure from the board, which license shall be properly recorded in the office of the Superintendent of Public Instruction at Harrisburg.

Why were medical practice acts originally enacted? To answer this question it is necessary to examine and comprehend the state of medical practice at the time licensing laws were enacted in order to understand the original purposes of the acts.

Many of the medical practice acts were originally passed during the first decade of the twentieth century. Their enactment took place at a time when medical care was considerably more rudimentary than at present, when sects espousing different methods of medical care abounded. Scientific medicine was in its infancy and the evolution toward modern medical education was just beginning. The primary purposes of the acts were to combat the evils of the time, to forbid the practice of medicine by untrained laymen posing as physicians and surgeons and to punish medical practice by charlatans and quacks. It was contemplated that licensing of individual practitioners would prevent the commercialization of medicine, resulting in low standards of patient care at an unfairly high cost. In short, the medical practice acts intended to prevent exploitation of the public by people holding themselves out as medically skilled when they lacked the necessary training, competency, or character.

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[5] In Pennsylvania, provisions for licensure include those for accountants, architects, chiropodists, dentists, midwives, nurses, optometrists, osteopaths, pawnbrokers, pharmacists, physicians and surgeons, real estate brokers, funeral directors, beauty culturists, chiropractors, poultry technicians, practical nurses, and attorneys.

[6] Pa. Stat. Ann. Tit. 63, Sec. 401a.

It is difficult to believe, understanding the context in which the medical acts became law, that the legislatures ever intended the acts to deal with other than natural persons. The evils which the acts sought to prevent were evils caused by individual practitioners. There were practically no corporations in the medical field. As a matter of fact, the corporate device itself was then just coming into wide use as a form of organizing business enterprises.

In most states the medical practice statute is framed to forbid practice of medicine by unlicensed "persons."[7] Some of the statutes plainly limit themselves to natural persons. The Idaho statute is clearly meant to apply to people.[8] The South Carolina act states that no person shall practice medicine until he reaches the age of 21.[9] When statutes forbid any person to practice without a license, and then define person in such a way that a corporation is definitely excluded, the conclusion is compelled that such statutes, at least, never dealt with the question of a corporation practicing medicine. The South Dakota court has so concluded.[10]

Even when the medical practice statute does not specifically define the word person so as to exclude corporations, it is only logical to understand the statute to mean that the person forbidden to practice without a license is the same person who, if he were qualified, could be issued a license. In every state the medical practice act consists of a number of statutory sections which must be read together. These sections, in addition to prohibiting unlicensed practice, deal with qualifications for licensure, such as schooling, examination, character, and discipline. Some acts go into detail about what scholastic subjects are required in training, what must be examined, and what moral character the applicant it required to show. Such provisions could be applicable only to human beings, to those natural persons spoken of in the statutes. It is quite difficult to imagine a corporation fulfilling the educational requirements for licensure. Except for those few states which expressly forbid the corporate practice of medicine,[11] the corporate practice acts were never intended to cover corporations or to license them.

Yet many of the courts which have broadly condemned so-called corporate practice do so on the ground that use of the corporate form of organization by physicians is expressly forbidden by statute. It seems quite clear that if reasons for forbidding corporate practice of medicine do exist, for the most part they cannot be found in express language of the medical practice acts. Thus, it seems that a judicial evolution in the law has occurred, which has resulted in a judicial encrustation of meaning upon statutes which, by their nature, did not originally deal with the problem of corporate practice. This judicial interpretation is peculiarly amenable to continued evolution.

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[7] E.g., Colo. Rev. Stat. Ann. Sec. 9-1-29.
[8] E.g., Ky. Rev. Stat. Ann. Sec. 311.560 (1).
[9] Idaho Code Ann. Sec. 54, 180 (2) (b).
[10] S.C. Code, Sec. 56-1355.
[11] Barton v. Codington County, 68 S.D. 309, 2 N.W. 2d 337 (1942).

After taking some pains to discuss the medical practice acts in a technical sense, it is only fair to point out that while most courts state that the medical practice statute makes corporate practice illegal, the courts usually condemn corporate practice on grounds of public policy. Court decisions stress the dangers in the division of the practitioner's loyalties between his patient and his commercial employer, dangers of lay control over professional judgment, and dangers in commercial exploitation of medical practice with consequent lowering of professional standards.

A logical examination of medical practice by a corporation

Let us examine the rationale upon which the corporate practice of medicine is condemned—the public policy considerations which supposedly militate against corporate practice.

That corporate practice will necessarily lead to lay control of professional judgment can certainly be disputed. For example, no lay control could conceivably occur in a corporation where the physicians themselves were the corporate owners and officers. So, corporations can be formed where lay control of professional judgment is impossible. And alternatively, lay control, with all its supposed evils, could occur in a partnership comprised principally of nonphysicians, an organization perfectly permissible under the partnership acts and the medical practice acts as well. Even where a lay-controlled corporation furnishing medical care exists—as in the case with a corporation such as United States Steel, which does furnish medical care to its employees—it is difficult to substantiate an argument that lay control inhibits the professional judgment of the medical director of the corporation or of individual plant physicians to a degree that this control represents a danger to the professional standards of medical practice.

The second objection to corporate practice, often made, is that it leads to divided loyalties in that the physician can be forced into nonprofessional choice between patient and employer. In short, so it is reasoned, corporate organization leads to commercial exploitation of medical practice. A quick examination of both popular and professional literature reveals a real concern in the minds of some that there presently exists considerable commercial exploitation of the patient by the medical profession. If these allegations are true, this exploitation has occurred without being facilitated by any of the supposed advantages of operating within the corporate form. It is beyond the scope of this paper to comment on the general validity of the concern with present commercialization, a popular theme often overstated, but it does seem clear that divided loyalties and commercial exploitation can and do exist without corporate practice. A potential division of loyalties between the well-being of the patient and the physician's economic welfare can exist even if the physician is a solo practitioner.

The crucial fact is that there is nothing intrinsically immoral or evil about the corporate form of doing business. It is an accepted organiza-

tional form with strengths and weaknesses which make its employment advantageous under certain business circumstances and disadvantages under others. However, neither the advantages nor disadvantages of incorporating an enterprise relate directly to morals. Corporations can be evil and immoral if directed by evil men. Partnerships have the same capabilities for good or evil results, depending on their human direction. In neither case do the capabilities exist in the form of business alone. Only humans are able to give organizational forms life and direction. An individual physician has the inherent potentiality to practice unethical and incompetent medicine. He needs no legal form to enhance his proclivities. To say that the form of organization of medical care can make good men bad and bad men good, is to say that individual physicians are ethical only when they are required to operate under certain organizational forms. I cannot believe this is so of the medical profession any more than would be the case with any other group in society. I have too much regard for the general dedication of the medical community to believe that physicians can don ethics with the same ease they don an overcoat, and can shed them as easily.

The truth of the matter is that corporations don't practice medicine. They never have and they never will. Medicine is practiced by individual physicians who see patients and treat their ills. To say that corporations do anything is to recite a legal fiction invented so that certain attributes of existence could be affixed to corporations. To say corporations act is a shorthand way of saying that the people who give a corporation life can act for the corporation in the same manner as if it were acting for itself. Thus, using this fiction, money is held in the corporate name, deeds executed by officers are considered deeds of corporation, debts are paid, and the corporation buys and sells property. That this concept has limits is manifest. A corporation cannot go to jail, it cannot go to college. Only the individuals connected with it can do either of these acts.

General Motors Corporation is often spoken of as producing automobiles. The corporation itself doesn't make cars, and yet we say it does because that it what its employees do. General Motors Corporation is a legal form, a fiction, within which acts by individual humans can take place. Similarly, when General Motors Corporation hires a physician to administer medical care to its employees through a company-owned clinic, General Motors is not treating patients; the medical care is provided by the plant physician. He is subject to administrative corporate control, but only he can make the professional decisions which result in treatment.

Corporate practice of medicine presently exists

If it is meant by the phrase "corporate practice of medicine" that corporations employ physicians and set their hours of employment, salary, and working conditions, then a considerable amount of corporate practice presently exists in our society and is tolerated without question.

Estimates have been made that of the 191,000 physicians in active

medical practice in 1949, 15,000 were engaged in salaried clinical practice.[12] There is no reason to doubt that this figure has increased considerably in the last 12 years, along with the rapid growth of doctor-owned clinics and group practice. In addition, in 1949 there were 7,000 physicians serving on salary in the armed forces, subject to the control of their superior officers, many of whom were nonmedical.

The employment of specialists, such as radiologists, anesthesiologists, or pathologists by hospital corporations is quite common. In the American Medical Directory for 1958 there are 13,600 physicians listed as being employed full time in hospitals in an administrative capacity or as medical specialists. Significant numbers of these specialists are on a salaried basis. In some hospitals, which are organized as charitable corporations, the entire medical staff is salaried. Most state general, mental, and tuberculosis hospitals provide patient care through salaried physicians; the same is true of the federal government.

Medical schools are either corporations in their own right or are integral parts of corporately organized universities. The salaried physicians who form the full-time faculties of such schools often treat private patients. In a good number of instances the fees charged for such treatment, by agreement, become part of the funds of the medical school. An even more clearcut example of corporate practice in universities is the operation of student health services. Usually, a separate annual fee is charged each student specifically for health service, and quite often treatment is provided by a university-employed physician compensated by salary for his services. Little question concerning such practices has been raised.

The history of medical care in America is replete with instances of corporations which utilize salaried physicians to render medical care. The example of General Motors in the preceding section is representative of most large corporations which employ medical directors, plant physicians, and nurses to provide on-the-job medical care.

Originally, the self-interest of many corporations, such as railroads and lumbering and mining concerns, required that they provide hospital and medical services to employees in isolated geographical areas. Medical care was often made available through the company's salaried physicians to families of such employees. A long-established group of hospitals which provide medical care, largely through a salaried medical staff, are the railway hospital associations. These associations presently operate about 36 hospitals in 22 states; in many instances this operation is a function of the hospital department of the railroad corporation.

A more recent and quite important factor motivating corporations to provide health care is workmen's compensation legislation. Other reasons include the desire to control occupational diseases, to permit physical examinations for prospective employees, and to reduce absenteeism because of illness.

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[12] Davis, Michael, *Medical Care for Tomorrow* (New York: Harper, 1955), p. 53.

Thus, there is a long history of the employment of physicians by industrial and commercial corporations for the express purpose of rendering medical care. Certainly the acts of these physicians in carrying out their duties constitute corporate activity in the usual sense, and under most definitions constitute corporate practice of medicine. This corporate practice continues and is largely unchallenged.

Other examples of presently unchallenged practice of medicine by corporations, are found in the area of group practice, where the corporate form is presently used for organizational purposes. A 1954 survey shows 174 group-practice centers operating under prepayment plans in 34 states.[13] Although only 20 of these plans employ only full-time physicians, many others utilize salaried physicians for certain services. Even those plans which do not use salaried physicians are involved in the "sale" of medical services by the lay corporation.

There are also many instances in which the courts have tacitly recognized and approved situations where physicians are practicing medicine as employees of corporations. There have been numerous court decisions sustaining the legality of nonprofit health corporations that make available the services of salaried physicians. The rationale of these decisions is either that the legislature has impliedly authorized corporations of this nature to practice medicine, or that the corporations are not in fact practicing medicine but merely making medical services available to their patrons and thus do not violate the medical practice acts.[14]

There are other evidences of legislative and judicial intent that corporations may employ physicians and collect their fees. In about 20 states, statutes give hospitals (normally organized as nonprofit corporations) a lien upon a patient's cause of action for personal injuries, to enable the hospital to collect its charges for hospitalization and treatment. As defined in these statutes, treatment includes medical and surgical services. In addition, in court hospitals are often able to collect bills for medical or surgical treatment. If such fees were the result of an illegal act, i.e., the corporate practice of medicine, then court recovery would have to be denied. In cases involving tort law, hospitals and other health agencies have been held to have a duty to supply medical care in an emergency on the rationale that entering patients rely on the hospital for such care. The hospital could have no such legal duty if fulfillment of the duty constituted an illegal act.

In summary, it is logical to be skeptical of a rule of law, such as the corporate practice rule, which is stated in such broad terms that it seems to condemn practices so prevalent in modern health care.

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[13] Brewster, Agnes W., *Group Practice Prepayment Plans, 1954 Survey.* (Washington, D.C.: Department of Health, Education and Welfare, Social Security Administration, 1956).

[14] Judicial decisions in District of Columbia, California, Missouri, Nebraska, New York, South Dakota, and Washington and opinions of the attorneys general of Connecticut, Minnesota, and North Carolina.

The future of the corporate practice rule

What is the future of the corporate practice rule, both as legal theory and in the practical sense that it tends to impede certain types of medical care organizations? We have seen that there is no all-encompassing corporate practice rule, that the law varies from jurisdiction to jurisdiction both in applicability and in effect. It has caused controversy and there is little reason to believe it will not continue to be controversial. Yet the rule is more and more being questioned.

It is quite likely that a major impetus to legalizing certain forms of corporate practice exists in recent attempts to provide partial relief from income taxation for physicians. Laws have been passed in several states that permit physicians to incorporate and to practice medicine as corporate employees. It is then possible for the corporations, under the Internal Revenue Code, to set aside income of corporate employees for retirement purposes so that the individuals pay no tax on such funds until the date they are made available for use.

Since 1951, a Connecticut statute has permitted physicians to form an incorporated clinic so long as all medical or surgical treatment, consultation, and advice is given by employees of the corporation who are licensed physicians.[15] The 1961 legislative session has produced at least five states which now permit physicians to form corporations to render medical services, Arkansas,[16] South Dakota,[17] Minnesota,[18] Wisconsin,[19] and Florida.[20]

The Arkansas and South Dakota laws are similar in intent, applying specifically to corporations formed by persons licensed pursuant to the medical practice act and providing that medical or surgical treatment, consultation, and advice can be given by corporation employees only if they are licensed under the medical practice act.

The Minnesota and Wisconsin bills are considerably more general, permitting the formation of a "professional corporation" (Minnesota) or a "service corporation" (Wisconsin) by natural persons, all of whom are licensed by the state to render the same type of professional service. Such natural persons may form a corporation to render one specific kind of professional service. Stock in such a corporation can be issued only to those persons licensed to practice the profession for which the corporation was chartered. However, the persons rendering professional service for the corporation need not be shareholders, but may be employed to perform professional service.

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[15] Conn. Gen. Stat., Sections 33-180-182, permits incorporation of Medical Group Clinic Corporations, as amended 1959.

[16] House Bill 325, 1961, legislative session.

[17] House Bill 689, 1961, legislative session.

[18] Senate Bill 42-X, approved May 6, 1961.

[19] Assembly Bill 587, 1961 legislative session.

[20] 1961 legislative session. More specific information on this statute is not presently available.

These statutes represent the first extensive modification of the medical practice acts aimed specifically at permitting a corporate form of organization and, strangely enough, have the full support of organized medicine. Such statutes can be rationalized on the grounds that they are a gimmick for tax purposes only and don't otherwise modify the concept of illegal corporate practice. And the acts are careful not to permit lay ownership or control of the newly permitted corporation. However, there is nothing in these statutes to prevent the shareholders from being nonpracticing physicians. Since this is possible, the only conceivable difference between the permissible corporation and the lay-controlled corporation is one of educational background of stockholders. This is a rather weak distinction.

It is quite likely that by the end of the next decade there will be few legal impediments in most states to the organization of medical services in whatever ways hospitals, medical schools, consumers, or practitioners desire.

C. The Corporate Practice of Medicine: A Discussion

INTRODUCED BY ROBERT A. MOORE

President of the Medical Center, Dean, and Professor of Pathology
State University of New York College of Medicine (Downstate)

Following presentation of the paper by John F. Horty on the legal aspects of organized medical services, there was an opportunity for discussion from the floor by Institute participants. The following section is taken from verbatim transcript.

THE PAPER by Mr. Horty has dealt with the problems of corporate structure in relation to the practice of medicine. If group practice and other types of practice develop as many at this Institute have predicted, the problem of the legal organization of the group will assume increasing importance in the future. What Mr. Horty has brought before us today will become a major problem in structuring relationships among the practitioners of medicine, hospitals, and medical schools.

There can certainly be no disagreement in the minds of physicians with the basic concept of English common law that only a trained and licensed physician can actually render medical care to a patient. On the other hand, I cannot understand what this has to do with the way in which the physician practicing as an individual chooses to arrange his personal business life, especially in this day and age of income taxes, so long as a lay organization does not make a profit from his activities. I am still enough of a physician to believe that a lay organization should not make a profit from a physician's activities.

I suspect that a great deal of the resistance and the reaction to what is called the corporate practice of medicine is a part of the conservatism of medicine about which we have heard so much in the last few days. I was delighted to hear Mr. Horty question the voiced objections to divided loyalties, lay control, and so forth in the so-called corporate practice of medicine. I certainly agree that these objections can be just as valid for other types of practice as for the corporate practice of medicine.

If it is ethical for a physician to employ another physician as his assistant, and perhaps even make a profit from his services, and if it is ethical for a profit-making corporation (as Mr. Horty has outlined) to employ full-time physicians to render medical care to its employees—to keep them in better health, and thus increase their efficiency, and thus increase the profits of the corporation—then why is it unethical for a hospital or a medical school, a nonprofit corporation, to employ physicians? When a group of physicians organize an association or a partnership which is not a corporation, it is both legal and ethical.

Mr. Horty's mention of tax liability reminds me of an experience I had in Pittsburgh that presented what I thought was one of the more interesting variations on administration. We had decided to set up some sort of an agreement concerning practice by the full-time faculty. I was directed by the chancellor of the university to consult with the university counsel. I spent some hours with him outlining what we wanted to do to protect the individual under the tax laws, protect the individuals under the state laws on the practice of medicine, and protect the university from charges of corporate practice.

After some weeks he called me and said he had a document. I went over it with him and it seemed to me to incorporate everything that was desired. He said it was quite legal: no question about it under the laws of either the state of Pennsylvania or the Internal Revenue Service. I took it to the chancellor and we took it to the trustees. There was an able tax lawyer on the board of trustees who said: "This document is quite illegal. I will not accept it and I won't have the trustees pass it." We never did quite resolve the question of the legality of our proposals.

We are grateful to you, Mr. Horty, for bringing before us these important topics, and particularly we are grateful to you for your delightful comments on the contrast of medicine and the law and physicians and lawyers.

DISCUSSION FROM THE FLOOR

DR. CARLYLE JACOBSEN: Gentlemen, the discussion is yours at this moment. Do any of you have questions or comments that you would like to bring up at this time?

DR. WARD DARLEY: Some of you may have attended the Sunday afternoon session and heard my very sketchy discussion of the trends that have taken place in income to medical schools between the years 1941 and 1958.

In this brief presentation, I discussed trends as they applied to nine sources of income to our schools. I pointed out that dollarwise all these sources of income had shown considerable increase, but that, as a proportion of total income, certain trends stood out that were worthy of very careful consideration as we look into the future.

The first of these nine trends had to do with tuition as a source of income. I think it is no news to any of you that between 1941 and 1958, as a proportionate source of income, tuition has dropped alarmingly in importance. The same can be said for endowments as a source of income. Nonfederal gifts and grants for unrestricted purposes have fortunately just held their own as a source of importance. Of course, federal gifts and grants for teaching purposes did not exist in 1941, so the fact that this now amounts to about 10 per cent of the average income of the medical school means that this has grown tremendously as a source of income. Income to the publicly supported schools from state appropriations has, of course, grown tremendously in importance. Income from general university funds to our private schools has gone up dollarwise, but has shown some decrease as a proportionate source of income. Income from research overhead did not exist in 1941, so its appearance on the scene as about 10 per cent of the medical schools' income is a fact of some importance.

Payment from hospitals and clinics to the support of the medical school has grown in importance, and payments to medical schools for medical service plans has begun to appear as a source of income of importance, particularly to the tax-supported schools. Income from medical service plans can be defined as an expenditure paid from medical service —they are not exclusively essential to the patient care that produces the income.

Now, then, income from this source is germane to the discussion that you have heard from Mr. Horty and Dr. Moore. I think it is important to our medical schools that they maintain a diversity of income, a diversity of support. It is important that the medical schools do not become too dependent on any one source of outside income, such as that available from the federal government. I submit that income from medical service plans, along with income from tuition and endowments, constitute the only sources of inside support that appear to be available that can maintain a healthy diversity of income and keep our medical schools from becoming too dependent on any one source of outside income.

Thus, as we look to the future, the potential income that is possible to the medical school from the operation of its medical service plans is of extreme importance, and I hope that in the very near future this question that evolves around the definition of corporate practice can be changed so that it will be possible for all medical schools to benefit from the potential in income from this source.

Dr. Charles G. Child, III: Mr. Chairman, I feel compelled to ask Mr. Horty's opinion on how much longer those of us responsible for residency training programs must resort to a variety of gimmicks. My

question: how can the university or the hospital legally collect for the services of a resident surgeon, perhaps five or six years out of medical school and a legally licensed physician and surgeon in the state? I realize there are many variations in these situations that are now under discussion, and I think I know some of the public opinions responsible for this, but until we can be a little clearer and a little stronger in our affirmation that this is not the corporate practice of medicine, it seems to me we are simply fooling ourselves and resorting to a really unhealthy group of gimmicks.

MR. HORTY: I think many of the medical practice acts specifically remove residents from any connection with the corporate practice of medicine. I am not sure about this for any one state, but I do know that many specifically provide that the employment of residents and interns does not constitute the corporate practice of medicine, and to the extent that it doesn't, you can collect for them in any way you so desire.

I am not aware that this really is much of a problem. I don't think there are many difficulties preventing a hospital from billing and collecting for residents or interns. There may be some opposition on the part of the medical staff or on the part of the physicians in the community, but there is legal reason for the opposition.

DR. FRANKLIN D. YODER: Are you familiar with the Kintner case?

MR. HORTY: The Kintner case permitted certain types of medical group practice associations to consider themselves as corporations for purposes of pension plan treatment under the Internal Revenue Code.[1] This decision enables such associations to set aside income to be paid later as pensions in such a manner that it is not taxable as income until released to the pensioner. The further significance of this decision is that it illustrates the great similarity of corporations and partnerships under certain circumstances.

DR. ODIN W. ANDERSON: I can see that it might be quite simple if I wanted to sue a physician for malpractice if I were his patient. What complexities are introduced if I wanted to sue for malpractice a corporation that had physicians on its staff?

MR. HORTY: As a rule I would much rather go into court with a suit against a corporation than I would suing an individual, because very few juries favor corporations. As far as suing a corporation with an employee physician, the question that would be reached first legally would be whether the corporation was under the doctrine of *respondeat superior*, which is the doctrine of master-servant relationship for the acts of the physician. In most cases where there is an employer-employee relationship, there is such responsibility, and this does not necessarily always require an ironclad finding of an ability to control the individual's acts which sometimes is required before suit of a master for the negligence of his servant.

This barrier has not come up often. In fact, in all of the hospital cases

[1] United States vs. Arthur R. Kintner, 216 F.2d 418 (1954).

that I have ever seen in which the person being sued was a physician, the question of *respondeat superior*, or master-servant relationship, gets lip service and that is all. It is possible to sue the corporation for the acts of a physician.

DR. CECIL G. SHEPS: I wonder whether one of the implications of Mr. Horty's comments is that there is a leadership responsibility for medical educators and others in the medical profession to set about deliberately to inform the public, therefore changing the climate of public opinion. There is very little doubt that the changing opinion in the United States and in the world with regard to the rights and privileges of people regardless of the degree of pigmentation of their skin certainly influenced the Supreme Court decision in 1954.[2]

If there are responsible people in medicine who believe that good medical care in the future is dependent in a rather crucial way upon the organization of services, it seems to me that they have a responsibility to make this clear. I think that the analysis Mr. Horty has made, that the present legal justification for such services stems from the overly simple application of the notion of the natural person in relation to the corporation, points up something that many people can understand if it is explained to them. It is a peculiar thing, I think, that in general the public is quite ready to discard laws if they are not convenient, and if they think they can get away with it. On the other hand, so many of us in medicine just recoil. If somebody says, "This is illegal," most of us have a tendency to stop thinking right then and there and believe that nothing further can be done.

But laws do undergo change. The changes occur largely, in democratic countries at any rate, as a result of a change of opinion, and it seems to me that we have some responsibility for changing the climate of opinion.

DR. JOHN F. SHEEHAN: Mr. Horty, would you please comment on the legal liability of the medical student in hospitals outside of the medical school set-up?

DR. JACOBSEN: I would like to combine that question with a somewhat related one, and that is the problem of the medical school faculty, not in relation to patients, but in relation to the students who participate in various laboratory enterprises and who sometimes are also involved in experimental studies being carried on by our faculties. You commented on research in relation to patients. I would like to ask you to elaborate a bit on teaching as an enterprise. Our faculties have often said that student participation is part of the learning. Therefore we can expect the medical student to become involved as part of his learning experience, but we have passed by the question of what our own personal responsibility might be when something goes wrong in that situation.

MR. HORTY: First, with respect to the question of liability of interns, or externs, or medical students, there are two questions involved. First, is the institution itself liable? The institution may be one of two; it may

[2] Brown vs. Board of Education of Topeka, 347 U.S. 483 (1954).

be the hospital in which students work or it may be the medical school at which they are enrolled. In those states that recognize liability of charitable institutions, the answer to this question is that if the institution permits these people to function as employees, whether they are compensated for it or not, the institution will be held liable. It is pretty clear that hospitals are liable for acts of interns and residents. They come under the employer-employee relationship.

As for the externs, problems arise because these people are paid nothing for their work. To this extent, it is a confusing question. If they are paid in any way for laboratory work or things of that sort, the institution would be held responsible. If they are not paid I think it would be a close question as to whether the hospital would be responsible, the medical school, or only the individual. The individual is always going to be responsible for his negligence.

The second question is: How about the faculty member supervising the student, what are his responsibilities and liabilities? It is clear that as a supervisor he has the responsibility to supervise—and this must be close supervision. Especially with students who have not yet completed their formal training, close supervision is going to be held to be an absolute necessity. It would shock the sensibility of the court and jury to find students actually do some of the things they do with a minimum of supervision. I can understand why supervision is not always possible. I am just telling you that laymen aren't going to understand it and they are going to act accordingly.

DR. JACOBSEN: How about the situation of our students who participate in learning experiments where they may have drugs or infectious material injected into themselves?

MR. HORTY: Again, I doubt that the layman is going to understand that this is part of the educational process. One may be able to persuade a court that it is necessary, or maybe a jury, but it is chancey. This whole question of experimentation hasn't been thought out on the part of the legal profession, or on the part of the medical profession either, as far as what risks are permissible. Are the procedures risky and what liability should follow from these risks? What safeguards were given to a certain student when he was exposed to a certain amount of risk in the learning process? Everyone takes risks in learning. When you experiment in a physics laboratory, you take risks. When you do all kinds of other things, you take risks. Whether this risk is any different because the skin is broken deliberately or something is swallowed deliberately is something that the courts have not yet answered. This is a very difficult question.

I could argue that there is no difference between this and other experiments or activities, such as football, where there is a risk that the student deliberately assumes in order to get an education sufficient to equip him for a career. There is plenty of legal precedent for this kind of argument. A woman who goes to a baseball game and sits behind third base assumes the risk that balls may go into the stands and hit her on the head. A person who dons a football uniform and goes on the field assumes the risk

that he may be tackled. It is usual legal reasoning, and I think a good argument could be made—(1) to the extent that student participation is educationally necessary, (2) and to the extent that safeguards are taken to protect the person—that such experimental risks, if they are truly part of the learning process, are permissible. If they are not part of the learning process, they are the same as any other experimentation. I think that such a situation raises questions which might require different answers.

DR. WALTER S. WIGGINS: May I ask a question with regard to activities performed by a medical student because of the curriculum of the school, which in the last two years requires participation and rather direct participation in what I think legally or otherwise would be called the practice of medicine. This is a part of the organized educational program. Would the legal liabilities that might be involved under these circumstances be different than when the student does the same thing, perhaps on the same day but at night in a hospital and not as part of the teaching program of the medical school? In the latter case, rather than paying tuition, the student is being paid for services. I have been told that the student under such circumstances is the same as a layman who illegally performs medical service.

MR. HORTY: Are we talking about whether he can or cannot do the acts because of possible corporate practice or his possible liability for doing them badly?

DR. WIGGINS: I would presume that not much trouble would arise unless something went wrong. It could go wrong under either circumstance. What I am asking is the difference between a person's doing these things as a medical student, as a part of the educational program of the institution in which he is enrolled, as opposed to doing them—exactly the same things, perhaps and under the same kind of supervision—where he is being paid as an extern, activity not recognized by the university as part of his education.

MR. HORTY: In the first instance, he is not violating any provisions against the unlicensed practice of medicine because he is exempt from these provisions by the nature of his educational program, and this is so in all states. However, if he is negligent in doing these acts, even under supervision, as part of the curriculum, he can be held responsible the same as the student nurse is liable if she is negligent and fails to use due care.

Now, with respect to the second situation, the extern may then be practicing medicine illegally because he is not licensed. If he practices medicine illegally, there may be a presumption that he is not using due care because he is not qualified to practice and to perform these acts, even under supervision. He just isn't qualified to do them. This is a difficult area because one has to go into a question of exactly what the act is, whether it does or does not constitute the practice of medicine, and whether it is done under supervision. If the extern can show that he is performing with care, this is going to have effect so far as liability to that individual is concerned. However, the state licensing board may wish to prosecute him. But, if the student performs without care, the fact that he is also

practicing medicine illegally isn't going to hurt him, because he is still guilty of malpractice or negligence. The only presumption that the medical practice act raises here is rebuttable; that is that the extern does not have the skill with which to do this act.

This is a pretty carefully drawn line, but I think it is accurate. It is not exactly the same as an instance where I am exceeding the clearly posted speed limit in my car. That is a presumption that is not rebuttable. If speed caused the accident, then I am guilty of negligence. I clearly am not using due care because the law tells me I cannot go over fifty miles per hour and I went over fifty miles an hour. The law tells me I cannot practice medicine, but if I do so with care, an individual may not be able to sue me. The state, of course, can indict me criminally, but this is not the same thing, although it is possible to confuse them. If a person violates one criminal statute, this violation will set up an irrebuttable presumption only if that violation caused the injury.

CHAPTER 10

The University's Role in Medical Care

A. Contrasting Roles and Needs of University and Community Hospitals

BY JOSEPH C. HINSEY

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The community hospital is here defined as one that serves a particular population, has no university affiliation, and receives no medical undergraduates for instruction. Among the problems affecting its educational program for interns and residents, those relating to organization and finances deserve particular attention. As for the university hospital, there is a need for efficient utilization of manpower and facilities and for effective communication with the medical profession. Both types of hospital have a service role and an educational role and share a number of important responsibilities and problems.

THE PROBLEMS related to the topic which has been assigned to me have been admirably dealt with in papers such as those of Snoke, entitled "The Teaching Hospital — Its Responsibilities and Conflicts," and of Burgess and Leonard, entitled "Community Hospital and Graduate Education Today."[1] Before going any further, I wish to define a university hospital as Snoke did: "the major hospital center in which is based the main teaching program of a medical school." A community hospital is one that serves a given center of population, that is not university affiliated, and that "does not receive medical undergraduates for regular clinical instruction nor have any direct ties with medical schools. Many of them, of course, are privileged to have physicians from the faculties of nearby medical schools as occasional or even regular speakers at meetings and conferences." The quote is from Burgess and Leonard, as is Table 10.1, which shows the number of hospitals in the country in 1958.

I shall limit my discussion to community hospitals with internships and without medical undergraduates. It is evident that there are many good community hospitals that do not fall into this definition. The uni-

1 Snoke, A. W. "The Teaching Hospital—Its Responsibilities and Conflicts," *J. Med. Educ.* 35, 1960, pp. 207-13.
Burgess, A. M. and Leonard, J. C., "Community Hospital and Graduate Education Today," *JAMA* 167, 1958, pp. 206-10.

TABLE 10.1
HOSPITALS IN THE UNITED STATES IN RELATION TO INTERNSHIPS AND MEDICAL SCHOOL AFFILIATION*

Hospital status	Number of Hospitals	Number of Beds
Approved†	2645	479,668
Unapproved	2654	106,830
TOTAL	5299	586,498
With internships		
Medical school affiliation	200	104,291
No medical school affiliation	600	173,215
Without approved internships	4499	202,162

*Source: Burgess, A. M. and Leonard, J. C., "Community Hospital and Graduate Education Today," *JAMA* 167, 1958, p. 207.
†Joint Commission on Accreditation of Hospitals.

versity and community hospitals have the common responsibilities for patient care, for teaching, and for the fostering of research, although these will receive varying emphasis, particularly research. The Joint Commission on Accreditation has set forth the essentials of good patient care as: (1) reliable medical records, (2) reliable reports in diagnostic tests, (3) an organized medical staff, and (4) a competent medical staff.[2] We can all agree that the best quality of patient care is essential for teaching, whether to medical students, house staff, or nurses, and for medical research of a high order. In a like manner, we recognize that the best quality of patient care is provided where teaching and research are being conducted.

THE COMMUNITY HOSPITAL

As defined above, the community hospitals provide patient care with staffs made up largely of private practitioners in the area and teach physicians who have received their medical degrees and are now serving internships or residencies of varying durations. Creditable research may be conducted either by the senior staff or by the house staff. As has been pointed out elsewhere, such a hospital has the following needs if an effective residency program is offered: (1) teaching personnel and program, (2) research space and equipment, (3) library, and (4) clinical material.[3] If these elements are not adequately provided, it won't be long until the internships and residencies either go unfilled or are filled with poorly qualified medical graduates. It is possible for the part-time staff to develop enthusiasm to meet the teaching and research needs, but in a number of instances funds have been made available to support

[2] *Bulletin of the Joint Commission on Accreditation of Hospitals*, No. 24, August, 1960.
[3] Hinsey, J. C. and Conlin, J. F., "Workship Conference on Specialism in Medicine, 4: The Hospital," *JAMA* 176, 1959, pp. 319-22.

a full-time director of medical education who provides leadership and planning.

In a recent editorial, Uhl has discussed the director of medical education whose duties were admirably outlined in 1940 in the report of the Commission on Graduate Medical Education.[4] Uhl is concerned that if present trends continue there will be widespread dissatisfaction with this type of appointment. He wisely states, "If a successful educational program is to be achieved, the hospital must be the right kind of institution. No director of medical education can develop a first-rate graduate and postgraduate teaching program unless the administration, the medical staff, and the trustees know what is involved and are determined to provide the needed resources. The greatest burden will fall upon the medical staff, which must become a 'faculty.' Without a dedicated, enthusiastic staff, the efforts of the educational director will be frustrated." The need is for leadership and devotion to the proper kind of ideals and for a recognition of the role of the physician. My colleague, Dr. Henry N. Pratt, has discussed this recently and listed three alternatives:[5]

> First, competitive private practice associated with a willingness to accede to self-imposed controls and discipline through tight medical staff organization dedicated to the principles of the Joint Commission on Accreditation of Hospitals and the medical audit and with due recognition of the moral and legal responsibilities of trustees.
>
> Second, completely full-time, salaried medical staff with closely integrated services and clear-cut channels of supervision and responsibility.
>
> Third, a combination of the above two types of organization with one or more mature and experienced full-time physicians.

The community hospital shares with the university hospital in the need for more adequate support of the house-staff training programs to provide better housing and maintenance, more adequate stipends, and protection of time for learning and contemplation.

In most community hospitals, a major portion of the teaching, if not all, is done on private patients. Creditor has described such a program in the Menorah Medical Center in Kansas City.[6] He emphasizes three basic principles which must be abided by: (1) the primary purpose of internship and residency is education and not service; (2) the trainee must be included in the total responsibility for the total care of the hospitalized patient; and (3) physicians and the communities which they serve must constantly be made aware of the benefits of a teaching program.

Much has been written favoring the use of private patients for teaching, but difficulties are encountered, particularly in residencies in sur-

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[4] Uhl, H.S.M., "The Director of Medical Education," *JAMA* 174, p. 408.
Graduate Medical Education, a report of the Commission on Graduate Medical Education. (Chicago: The University of Chicago Press, 1940), pp. 79-81.

[5] Pratt, H. N., "The Role of the Physician in the Hospital," presented at an instructional conference at the American Hospital Association Convention, August 31, 1960.

[6] Creditor, M. C., "House Staff Training on a Private Medical Service," *J. Med. Educ.* 35, 1960, pp. 769-774.

gery and the surgical specialities, as Zintel has stated recently.[7] One of the great deficiencies in many community hospitals is that the outpatient services are not sufficiently developed, if at all. Another need is for greater numbers of "service cases" that are cared for mainly by the house staffs. I have seen hospitals in which the residents in surgery have insufficient opportunity for operative experience on the same patients for whom they have the responsibility for pre- and postoperative care. In many instances the house staff really carries the service load for busy practitioners. It is open to serious question whether some of the unaffiliated 600 hospitals with 173,215 beds should be permitted to carry on programs for internship and residency training, as they are now doing, in the absence of a sense of academic responsibility and sufficient support for the teaching mission. It may be that the same criticism could be leveled at some of the affiliated 200 hospitals with 104,291 beds.

A very interesting analysis has been made recently by Pratt and Hill of the cost of a program of medical education in the Rhode Island State Hospital in Providence, Rhode Island.[8] I cannot present their data here but I shall quote from their conclusion, "In summing up, then, education costs are paid by both private and ward patients, third-party payers (Blue Cross, insurance, and government), private endowments, special bequests, foundation grants, government grants, and donations of time and money by physicians. It would seem that this group represents a comprehensive partnership of private citizens, private organizations, and government. Can there be a fairer method of paying for medical education?" They quote the late Alan Gregg who said, "the cost of medical education is a part of the cost of medical care."[9]

In financing their total programs, community hospitals have serious problems, many of which are shared by university teaching hospitals, such as inability to collect full costs from city, county, Blue Cross, and other third-party payers. It takes real vision and courage at times to face up to the necessity of added expenditures to bolster up the educational and research programs in order to maintain a first-rate institution. Boards are tempted to defer maintenance costs, which in the long run only leads to greater troubles. It is gratifying to see how some of our community hospitals have worked diligently to meet their community responsibilities, and, in so doing, have strengthened their community support.

THE UNIVERSITY HOSPITAL

The university hospital has some responsibilities that differ from the community hospital's, although both types of hospital are fundamentally

[7] Zintel, H. A., "Postgraduate Surgical Training and the Changing Economic Status of Patients," *JAMA* 167, 1958, pp. 211-4.

[8] Pratt, O. G. and Hill, L. A., "The Price of Medical Education: A Dissection of One Hospital's Expenditures," *J. Amer. Hosp. Ass.* 34, 1960, pp. 44-7 and 104-5.

[9] Gregg, Alan. *Challenges to Contemporary Medicine.* (New York: Columbia University Press, 1956), p. 88.

quite similar. We will assume that the maintenance of the best quality of patient care takes precedence. Coequal with this is the need to provide a milieu in which a top-flight learning and research experience is available to all concerned, whether it be the senior staff, house staff, medical students, nurses, nursing students, or allied personnel. This requires the wherewithal to give adequate compensation to all parties involved, to acquire and maintain necessary apparatus and facilities, and to have available in sufficient numbers, on foot and in bed, patients who are willing to cooperate in forwarding the learning experience. These patients may be indigent, part-pay, or private, but they must be willing to share in the forward program of the hospital.

I shall not belabor the financial side of this problem beyond saying that I was impressed by Snoke's statement:[10] "Preliminary studies that have been made during the past six months in New Haven raise considerable doubt over the assumption that medical schools cause a substantial increase in the per diem cost of a primary teaching hospital, if proper allocations of expense are made between hospital patient service on the one hand and teaching and research of the medical school on the other. This will require a great deal more study before definitive conclusions can be reached, and will also be dependent upon adequate accounting and cost analyses." Appropriate studies are under way that should provide important information. It has been gratifying to me to see that the National Institutes of Health have recognized the cost of patient care as a just research cost in the programs of their Clinical Research Centers.

Without wishing to de-emphasize the financial problems, I should like to state what seem to me to be some of the crucial problems facing our university hospitals.

The proper organization and manning of our ambulant patient services should have a high priority. We can well take advantage of some of the things that are done at the Mayo Clinic in our development of efficient outpatient departments. Many of us need to improve our facilities to make them attractive to all classes of patients and to adapt them to the best type of patient care. Williams has discussed this need as it pertains to medicine.[11] We need more extensive full-time coverage to provide adequate organization, from the standpoint of the learning process as well as for better patient care, and in my judgment the senior staff, including the department head, should participate actively in outpatient work. Any avoidable waste of the patients' time and that of the students and staff is inexcusable. Important student attitudes are developed in outpatient services, just as they are in our inpatient services.

Our goal in the inpatient services should be that eventually every patient will have the privilege and opportunity to participate in our

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10 Snoke, A. W. *op. cit.*

11 Williams, R. H., "Future Training in Medicine and Medical Specialties," *JAMA* 167, 1958, pp. 192-9.

academic programs. Here again greater efficiency should be our goal in order to cut down the time for diagnostic procedures. There is great need for improvement in many facilities for our service laboratories, both in relation to patient care and to teaching and research. The great developments that have occurred have presented needs for properly located additional space. Many of our university hospital staffs need to be reminded from time to time that good medical care is discriminative and that no tests should be ordered without good reason. At times it is difficult to curb the curiosity of our house-staff members, but at the same time it is a waste of time for the patient, a waste of money and space for the hospital, and a poor learning experience to order tests for which there is no indication.

Our university hospitals must be sensitive to community responsibilities. Many of our emergency services are inadequately housed and manned. Emergency service is a most important part of the learning experience of many of our students and staff and can be a valuable public relations factor. The well-baby clinics, the programs for prospective parents, and cooperative activities with the medical profession and local medical and health agencies are activities which should be more widely developed.

With the introduction of full-time clinical staffs, the elaboration of residency and internship programs, and greater insurance coverage for both hospital and professional costs, there has arisen a whole set of problems in our university hospitals that are too extensive for me to cover here. However, I cannot fail to discuss some of them. The difficulties arise because of failure of communication with the medical profession in private practice and because of the inevitable economic factor which instills fear into many who do not or will not understand the motives of the university hospital. Because of inability to secure enough money, many of our medical schools have developed arrangements with their geographic full-time staffs in which income from private practice is a part of their compensation. Elsewhere I have discussed the many ramifications of the problem as far as it pertains to the full-time faculty.[12]

In the past two or three years, we have had some unfavorable experiences relating to the payment of Blue Shield fees to residents at the Presbyterian and New York hospitals in New York. Since 1953 or 1954, the senior residents on our service at the New York Hospital have been licensed for practice in New York state. When they cared for patients in our pavilion services who had insurance for medical or surgical care, they submitted bills in their own names and the funds received were placed in a special fund managed by the Cornell University Medical College. This money was then used to give additions to the stipends of all our residents and interns. However, the United Medical Service stopped paying these bills late in 1957 and early in 1958, and we then cooperated with our colleagues at Columbia-Presbyterian in negotiations

[12] Hinsey, J. C. "Full-time Clinical Faculty. An Interpretation of the Problem as it Concerns Medical School Administration," *JAMA* 162, 1956, pp. 16-9.

with the UMS in order to restore what seemed to us a just compensation. More recently representatives of Albert Einstein and New York University have participated in some of our negotiations. I will not review all of the opposing contentions, but at present the whole matter is under the consideration of the superintendent of insurance of New York state, and we believe that he "would be amply justified in recommending, at least in connection with the university teaching hospitals, that UMS reimburse duly licensed physicians who are interns and residents for medical care provided its subscribers."

It is our conviction that the status of our whole house-staff group should receive serious consideration. Are they being imposed upon by undue service demands? Is their experience an educational one and do they have time for contemplation and individual development? Are they properly housed and are they being provided financial support? Certainly the organized medical profession has a real stake in what happens to this group of young physicians. As a matter of fact, many physicians receive material help from them in the care of their private patients, and thus have an obligation to help the teaching hospitals and the medical schools support graduate teaching. We are trying to maintain these programs in the "free enterprise" manner and hope that we can keep it that way. Possibly the medical societies might put aside their economic fears and help us maintain adequately one of the most valuable features of our whole system of medical education—the internship and residency programs.

Finally, Snoke has emphasized the importance of keeping the three legs of the farmer's daughter's milking stool of equal length.[13] In a recent number of *The Journal of Medical Education*, I presented an editorial in which I quoted from a statement three of us (Dr. Aura E. Severinghaus and Dr. Joe R. Brown) had prepared:[14]

> We consider it to be the chief objective and responsibility of those individuals who hold academic appointments in our medical schools or who serve other medical institutions in a comparable manner to (1) add to our present store of scientific knowledge, (2) integrate new discoveries with the existing body of knowledge, (3) pass on this knowledge to students who, hopefully, will become the academicians of tomorrow, and (4) suggest the early application of medical knowledge wherever it has a bearing upon the care of the sick.
>
> We believe that this simple statement is timely because there is not infrequently a tendency to ignore the fact that all of these components of academic responsibility are essential; are for the most part inseparable, and must be kept in balance.
>
> To reiterate, we believe that medical progress will be secure and hastened to the extent that we succeed in looking to the discovery of new knowledge through research, its dissemination through teaching, and with the least possible delay its application to the betterment of patient care.

[13] Snoke, A. W. *op. cit.*

[14] Hinsey, J. C., "Editorial" in Medical Education Forum, *J. Med. Educ.* 35, 1960, p. 835

How important it is that we staff our university hospitals with top-flight teachers who are able investigators and capable and sympathetic doctors! Balance is the keynote and patient care of the highest quality an absolute necessity.

Bauer has emphasized that the special role of the teaching hospital is a creative one.[15] He has described an experiment on the medical service at the Massachusetts General Hospital where this service is composed of autonomous units, each covering one of the specialties of internal medicine. I was much impressed with his last paragraph, "Good medical care, even in a scientific age, must still depend on the dedicated and well-trained physician. If we cultivate this attitude and create an environment in which it is commonplace, our medical students should learn that a good medical history is characterized as much by detailed knowledge of the personality of the patient as by an accurate analysis of the physical manifestations of his disease. With interest focused on the individual person, our goals must still be health and happiness. Each member of our house staff must still keep one thought uppermost as he approaches each new patient: How can I help this patient and, as I do so, what can I learn?"

Many of our university hospitals and some of our community ones are conducting experiments on how to improve patient care. We have had one in our center that has been going on for a number of years in which we have been trying to learn how better to supply continuing care of a high quality on our ambulant patient service. We must take greater leadership in learning how better to serve the health needs of all of our citizens.

I cannot close without emphasizing the fact that what happens in a community hospital will materially influence the standard of care in that community as well as others to which the house staff may eventually go. The university hospital exerts an even greater influence because of the inclusion of undergraduate medical students. Certainly the improvement of and increase in numbers of university teaching centers has been one of the most significant factors in raising the standards of our nation's health. We in medical education have the obligation, therefore, to strive for excellence.

And may I say in closing that, with all the criticisms thrown at the medical schools, the teaching centers, and the university hospitals, I am convinced that our branch of medical education has done more than others to try to study its needs, to tool up, to learn to walk before we run, and to be prepared to meet the problems that are before us. We have been criticized by many people, including university presidents, who by their own activities have done but little to advance our lot. As we criticize our activities, let us remember that the very fact we are talking about these problems is an indication of the vitality and foresight of this branch of our whole educational system.

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[15] Bauer, Walter, "Medicine in the Teaching Hospital of Today and Tomorrow," *JAMA* 171, 1959, pp. 1277-81.

B. Teaching Tomorrow's Care Today

BY PHILIP D. BONNET

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The discussion by Dr. Bonnet of Dr. Hinsey's paper on the university hospital and the community hospital proposes a recognition of the true role of the university teaching hospital as quite different from the role of the community hospital. A new title, *universital,* is suggested. The primary purpose of such a hospital would be medical education through demonstration of tomorrow's medical care.

IT SEEMS TO ME that I could contribute most in this discussion by endeavoring to sharpen the contrast between the university hospital and the community hospital. First, I wish to acknowledge my great indebtedness to many for this opportunity to take part in the Institute, and further to acknowledge my debt to many speakers, including those at the 1960 meeting of the Teaching Hospital Section of the Association of American Medical Colleges, who have assisted me in the development of my own thoughts on this matter.

In the preceding paper, Dr. Hinsey made four points that I would like to discuss in particular: (1) university hospitals and community hospitals have the same triad of responsibilities—patient care, teaching, and research—but with differing emphasis and with differing quality; (2) the primary purpose of internship and residency is education and not service, even though most of the—note the words—teaching is done on private patients; (3) greater numbers of service patients are needed in community hospitals; and (4) community hospitals have at least as great and often greater problems than university hospitals in financing their total programs.

First, we need some definitions. *Teaching* in my opinion is much too general a word with which to make any distinctions among hospitals. Parents teach children; old employees teach new employees; doctors teach patients, and so on. Every hospital worthy of the name is a teaching hospital to a very large extent. I submit that the word *teaching* must be discarded as any means of differentiation among hospitals. *Training,* however much it may be currently out of fashion and regarded as unprofessional, is or should be an honorable word that is descriptive of certain essential processes and experiences involving the learning of skills, often manual skills, but often intellectual skills. We should learn to use it again without flinching—particularly where it is applicable and not just in the context of National Institutes of Health grants. *Education* is a program of organized and guided learning with graduated and increasing emphasis on independence and originality. All three of these words in common usage are synonyms, but should be kept distinct for this discussion.

A hospital is an institution where doctors care for patients who re-

quire, or who are thought to require, a bed. A community hospital is one that has a primary responsibility for meeting the hospital needs of a community or region. A university hospital might be described, then, as a hospital that is associated with a medical school and where medical students receive a significant proportion of their clinical instruction and experience prior to attaining the M.D. degree. Is the university hospital more than this? It is, I believe, quite a different institution from the community hospital, but the university hospital that Dr. Hinsey was describing was also a community hospital, and thereby its true university function became obscured.

It is my conviction that a mutation occurred in hospitals about 1948, and that a taxonomist would classify the present-day university hospital as at least a new species, perhaps in the process of becoming a new genus. It has not yet shed much of the form of its antecedents, and it has some way to go before acquiring any particular or definite form.

So great is the change in my opinion that a new word is required to differentiate the new from the old. For present emphasis, let us use the word *universital.* This new institution would be defined as a special type of hospital that exists for the sole purpose of medical education, so that tomorrow's care may be demonstrated and taught today. It is, of course, involved in research of all kinds and in patient care. The patient care would become a means of learning and of teaching in a living, real-life laboratory.

I am not unmindful of the difficulties, nor of the importance of the doctor-patient relationship, the importance of the patient's confidence in those who care for him, the importance of finding patients for such a hospital, or the need to recognize that patient care is "playing for keeps" in such a hospital just as much as in any other. I am not suggesting guinea pigs or a primate colony. I am suggesting that, instead of the passive and submissive service patient of the past, the patients would include self-reliant, active individuals who would have a recognized role as teachers and as students themselves. For too long we have perpetuated a double standard of medical care—based on obsolete economic class—in which the science has not been different, nor the motive, but in which the skill has been different, the attitude has been different, and the role of the patient has been different.

The cosmic rays that have caused this mutation originated in Congress and were transmitted from Bethesda. The continuing shower of rays will force the development of the universital which may ultimately in fact have two subdivisions, a clinical institute and a research institute. The universital should, in my opinion, as quickly as possible shed its direct community responsibilities for medical care today. This will take some time, and it may just be that the university hospital will have to continue in a separate division its function as a community hospital, but the universital must extricate itself from dependence on today's medical care, on high-occupancy economics, and it must free itself from competition with today's community practice.

If the medical school has a responsibility toward assuring the quality and up-to-dateness of community medical care, and I think it has, this must be handled largely by a new extension department offering continuation courses to medical staffs in community hospitals, and if requested, also supervision of the quality of performance. Such services should be paid for.

The universital would have not many more than one bed per enrolled medical student. There would be relatively larger ambulatory and rehabilitation services. It would seek to serve a whole population and would be suitable for accommodating a prepaid plan for comprehensive care. The patients in the universital should be expected to pay for their care on some basis that imposes no economic penalty on them for so doing, but also provides them no particular economic advantage.

For the present, internships and residencies should be recognized as training programs, not educational programs. They are good apprenticeships, but for the most part, if the strict meaning of education is used, they are pretty poor education. The universital should continue to sponsor its share, improving them as possible, but until the clinical years of basic medical education are placed on a true university footing, it is difficult to see how the internships and residencies can be, though they would likely rise almost automatically once the foundations are laid.

Progress is made by differentiation, reclassification, and definition, and therefore I believe that we must recognize increasing differentiation in the function of hospitals.

Let me return to the original four points, with each of which I find myself in substantial disagreement. First, the university hospital and the community hospital are now substantially different and have different functions. The former's function is education, with the latter's function service for today. Second, internships and residencies are still training apprenticeships and not yet true education. And why not training grants for all these, incidentally? Third, greater numbers of service patients are not, in my opinion needed by either university or community hospitals for any valid future purpose. They are both an anachronism and an impediment. The service patient was and still is the source of the massive community responsibilities that have mired medical education in patient care in the present and the past, and prevented university medical schools from assuming any posture of effective leadership in medical affairs.

The fourth point of Dr. Hinsey, regarding finance, I have intentionally underemphasized. Factually, it is the private university hospital rather than the community hospital that has the greater financial need and is the hardest pressed today. Community hospitals are building out of earnings or repaying mortgages out of earnings. A few with charity loads have deficits, but they are in the minority and their position is improving. The cost of training in such institutions is a perfectly legitimate part of the cost of patient care, just as the training of engineers by the Ford Motor Company after they are educated in the educational system is a legitimate part of the cost of a car.

The university hospitals—the private ones, that is—are depleting their endowments, carrying on in obsolete and deteriorating buildings, and it is they who are in the greatest need of a financial transfusion. Many expedient compromises have been made, but most of them are far from satisfactory. Money should be made available to the university hospitals labeled "education"—money not in the name of research, not for charity, but for education itself, so that the university hospital can become, in truth, a universital.

DISCUSSION FROM THE FLOOR

DR. CARLYLE JACOBSEN: We have a limited time before bringing this session to a close. I would like to call on Dr. Hinsey to give him his opportunity to respond.

DR. JOSEPH C. HINSEY: I am grateful to Dr. Bonnet for the comments he has made. In the first paragraph of my paper, I defined, as did Snoke, the university hospital as "the major hospital center in which is based the main teaching program of a medical school," and a community hospital as "one that serves a given center of population, that is not university affiliated, and that 'does not receive medical undergraduates for regular clinical instruction nor have any direct ties with medical schools.'" My remarks were directed to this differentiation. Apparently Dr. Bonnet is satisfied to accept training as the sole objective of our graduate programs. He has described it as "certain essential processes and experiences involving the learning of skills, often manual skills, but often intellectual skills." I am unwilling to accept this as the only objective of our graduate programs because I see the responsibility for teaching at a higher level for educational or academic development. Unfortunately the latter responsibility has been abdicated in many of our programs, as Dr. Bonnet seems willing to do.

I sincerely hope that there will be developed some "universitals" and that money will become available for them. I share with Dr. Bonnet the hope for many of the objectives he has outlined for such universitals. However, I am proud of the fact that our own university hospital, and I am confident that this is true of the others, has not lost sight of its community responsibilities. It seems to me that some of us should try to continue to perfect our university hospitals along the lines that have brought them this far; we should try to keep those aspects of the part-time system and its integration into the full-time one that have proven worth while, and we should still preserve those community services and relationships that have been productive.

Likewise, until a lot of water has run over the dam, we must still rely upon the service patient as an essential element in our educational program. By the term "service patient," I do not wish to imply indigency as the sole criterion. Service patient to me means one who is the patient of the staff of a pavilion or ward rather than of a private phys-

ician. I repeat a statement made in my paper: "This requires wherewithal to give adequate compensation to all parties involved, to acquire and maintain necessary apparatus and facilities, and to have available in sufficient numbers, on foot and in bed, patients who are willing to cooperate in forwarding the learning experience. These patients may be indigent, part-pay, or private, but they must be willing to share in the forward program of the hospital."

In no place in my presentation have I said that university hospitals are better off financially than community ones. Most of my waking hours are consumed in trying to solve our financial difficulties and in getting money to maintain and develop our program. Certainly our private university hospitals have real financial problems and I have dealt with some of them. I don't see how Dr. Bonnet could have gained any other impression. However, just because our problems are difficult is no reason for throwing in the sponge and saying to Uncle Sam, "Come on in and take over." There is a great challenge facing the private university hospital to modify its program in such a manner as to be able to advance its educational responsibilities and at the same time finance a larger portion of them than is now being done.

DR. JACOBSEN: Would anyone like to address questions and comments to Dr. Hinsey or Dr. Bonnet?

DR. VERNON W. LIPPARD: I would like to focus our attention to a very practical problem involving community hospitals and university schools. It involves the payment of money to the cost of residency staffs. I was asked by a national magazine to derive an article on this serious problem of why men four, five, and six years out of school were being paid $1,800 a year. I didn't do it because I didn't know the answers. Perhaps I can get them here this morning.

I think we have two basic assumptions to make: (1) that the resident staffs in general are being underpaid and (2) that they are not only being trained, but are contributing in a very substantial and important way to the care of the patients. With these two basic assumptions, I would like to ask Dr. Hinsey three questions:

First: Should the service be charged to the patient on the hospital bill? In other words, should the entire cost of the residency program be charged in with the cost of food, service, and so on, directly to the patient?

Second: Should part of this cost be charged to education on the assumption that the resident spends part of his time teaching medical students?

Third: Should we consider a charge to the private physician who has patients in the private wards for the very important service the residency staff renders to him in the care of his patients? If he is in a little nursing home kind of a hospital and does an operation, he has to pay one of his neighbors quite a substantial amount for acting as his assistant, but if he brings the same patient to the university hospital, he gets it for nothing. Why shouldn't he pay something toward the cost of the residency staff?

DR. HINSEY: About the cost of the residency program, I think a part of it is figured in against the Blue Cross costs in the formulation in our

area. It doesn't completely cover the costs. Likewise, the university participates in payment of the residents, although not in a substantial amount, but yet it is a recognition of the role that these people do play in the educational program.

And then the problem of charging private doctors. I am sorry John Dietrick isn't here; this is his favorite topic. For a long time we have charged the New York Hospital for this type of activity. This is an extremely serious problem. I have the deep conviction that the fact that this group of people has been so underfinanced for so long a time has contributed to some of the attitudes of our graduates toward the whole economic side of medicine—it is no wonder as you talk to these people, as I do from day to day, that you hear about the problems they are faced with.

It is a different situation now than when some of our residency programs were started. When we started, very few of our residents were married. Now quite a substantial number are. That is one of the facts of life; you can't do anything about it. I think we have to meet it. I don't think it is good reasoning to say, "Well, we didn't do it in my day; we are not going to do it now." I believe that these people are a very important part of the whole education. I agree with Vernon Lippard completely as to the role they play in the undergraduate program.

C. Administrative Dilemmas in Providing Care

BY JAMES P. DIXON

President, Antioch College

The role of the medical school is heavily influenced by the educational purposes of the university, of which it is a part. This influence, and the degree to which the functions of the university change, create six dilemmas of current importance for the medical school to study: (1) the dilemma of the increasing cost of health care and how it shall be paid, (2) the dilemma of the extent of professional care, (3) the dilemma of freedom from bureaucratic restraints, (4) the dilemma of quality and the organizational form of patient care, (5) the dilemma of physicians and hospitals (who works for whom?), and (6) the dilemma of the role of the medical school in social change. The conclusion is that medical schools have not yet succeeded in equipping physicians to manage matters of patient care administration. This may change, however, if the community assigns to universities a new role in the rationalization of the distribution of human services.

THE OTHER DAY the wife of a member of our Board of Trustees brought me a book. It was the second edition of a text by Charles D. Meigs, then professor of midwifery and the diseases of women and children at Jefferson Medical College in Philadelphia. First published in 1847, it was

entitled *Woman, Her Diseases and Remedies*. Dr. Meigs did not restrict himself wholly to the science of medicine; he treated the art also. Early in the text he had this to say to his students: "If you would be learned men, it is well; but it is better to be wise men. A man may be wise without being learned; but it is not uncommon to be learned and yet to be a perfect ass in all that relates to what I might term administration or action." For medicine this lack of congruence between learning and wisdom sometimes seems as apparent today as it was to Dr. Meigs 100 years ago. This incongruity is central in any discussion of the role of medical education in patient care.

The function of the medical school

A medical school is an institution for organized learning. As such it is heavily influenced by the general role of institutions of higher education. The functions of the university in this country may be classified under three broad headings: (1) the pursuit of knowledge, (2) the transmission of knowledge, and (3) the utilization of knowledge. Of these, perhaps the third function is at present in the least sophisticated stage of development. We have discovered the latent capacity of institutions of higher education to undertake programs of action, but the nature of their faculties and sources of support, as well as their generally conservative nature, have acted as restraints to assumption of operational responsibility for programs of patient care that extend beyond immediate teaching needs. Characterized in another fashion, this development is reflected in the continuing struggle to determine whether a university or a medical school is subject to the control of its faculty or to the demands of the public. Most medical educators would, I suspect, take the position that medical education is the first order of concern and that direct responsibilities for patient care should be undertaken only to serve this end. On the other hand, one may surmise that as the base of tax support for medical education broadens, there will be an increasing call upon the medical school for involvement in patient care in the name of community service.

Before examining some current situations that affect the medical school role, two general observations are perhaps appropriate. The influence of the medical school on the quality of medical care is enormous—indeed it would appear to be increasing, particularly with the shift of control of internships and residencies to the faculty axis. The standards of patient care that are learned in teaching hospitals establish the standards we expect in all our hospitals. Furthermore, extensive use of national qualifying examinations insures some uniformity of quality in the finished product. These highly qualitative standards tend to be rigorously enforced in patient care programs under the direct control of medical schools. Much more indirectly they influence the quality of care throughout the country as a whole.

The second general observation is that some distinction needs to be made between medical care and patient care as far as the medical school

is concerned. For in current practice the services of nurses and other health workers far outweigh in a quantitative sense the services of physicians. If a medical school is to become involved in the provision of patient care, it must either confine its interests to the medical component or establish an organization which effectively subordinates all other professional services to the control of medicine.

The dilemma of cost

I shall now attempt to identify six dilemmas of present importance. The first dilemma is that of cost. The Somers[1] have recently stated that "costs are probably the most explosive issue in health care." Not only is good medical care expensive, it will become more so, and health services generally are likely to account for an increased percentage of the gross national product. If a school discovers that in order to maintain its teaching excellence, or to serve a community function, it must undertake responsibility for operation of a patient care program, then a substantial portion of the cost of that program must be borne outside the conventional sources of financial support for higher education. Support must come from fees for service, capitation payments, or private or public subsidy. In any case, this places large entrepreneurial responsibilities upon the medical school. And, as an agency involved in patient care, it cannot avoid participation in the debate about cost.

Most educators express a concern for excellence that overrides the concern for laboratory costs. The assumption of inadequately financed patient-care responsibilities would be viewed by medical educators as jeopardizing the teaching program. Teaching care is high-cost care, a fact that is not fully appreciated by those who pay for it. It is ultra-crepedarian for the dean of the medical school to be more concerned about the financial support of the patient care program than about the quality of teaching. It must be said, however, that although medical schools teach very little about the art and economics of patient care, nonetheless the physician controls—insofar as there is any control at all—many of the elements contributing to the cost of patient care. As a medical student one can be unconcerned about the cost of patient care, but as a practitioner one can hardly be so. Where is the physician to learn wisdom in such matters? In the medical school or the medical market place?

The dilemma of professionalism

The second dilemma I wish to identify I shall call the problem of professionalism. Professions are by nature conservative. They are interested simultaneously both in the preservation of status, rights, and privileges,

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[1] Somers, Anne R. and Herman M. *Health Insurance: Are Cost and Quality Controls Necessary?* (Washington: Brookings Institution, 1960)

and in the improvement of standards. Although agents of the laity, they respond slowly and defensively to external demands. Medicine is clothed by these professional qualities. And, although it is unfair to say that medical education is controlled by organized medicine, it is certainly heavily influenced by the mores of organized medicine. Extensions of the responsibilities of medical schools into patient care beyond that needed for teaching might further consolidate the control of organized medicine. There are those who would view this with concern. In quite a different view, professions, and the medical profession particularly, have an anxious concern for control by the teacher of the clinical setting in which teaching occurs. The exercise of this control tends to divide physicians into two groups: those whose qualifications are acceptible for membership on a faculty and those whose qualifications are not. Now of course this is good, conservative, professional concern for standards. But not all of our citizens can be served by physicians of faculty qualification. Shall these physicians be excluded from teaching hospitals? Of course they will be, but what does this do to patient care beyond the bed curtains of the teaching hospital? Professionalism serving the profession well does not always equally serve the consumer.

The dilemma of bureaucracy

A third dilemma arises out of the bureaucratic rigidity of human organization. Patient care must be mediated by such organizations as hospitals, clinics, group practices, halfway houses, and rehabilitation centers, all of which require institutionalization to perform their functions. They must classify, codify, and clarify their tasks. They must delegate and they must standardize. True learning, however, is alleged to occur best in a climate of freedom. If medical education is to rise above the mere task of supplying manpower for existing health institutions, it needs to be as free from the restraints of institutional bureaucracy as possible.

The dilemma of content and form

This situation suggests the fourth dilemma. This is the ends and means or, as I shall call it, the content and form problem. Medicine as a profession has much to do with the content of patient care. How much, however, can it be expected to influence its form of organization? During one of our frequent crises some years ago at Philadelphia General Hospital, when there was substantial conflict within the medical staff as to what form of medical school affiliation was most helpful to the health of Philadelphia's citizens, Mr. Dilworth, the mayor, reacting in some exasperation, paraphrased Clemenceau to say that the health of the people was too important a matter to be left to physicians alone. Patient care services are rapidly becoming more sophisticated. They involve the administration of multidisciplinary groups. They are increasingly involved, through insurance and government support, in both economics and politics.

The medical school as we presently know it is not equipped to teach the physician how to administer medical care. And yet it is constantly alarmed that the wicked or stupid intervention of government into form will destroy the professionalism of content. How can the medical school, already substantially supported by public funds, assist in resolving this dilemma?

The dilemma of who works for whom

A fifth dilemma, related to those above but sufficiently distinct to merit special attention, arises out of current conflict between physicians and hospitals. This is the issue of who works for whom. Since the hospital is the principal social institution used by medical education, this issue is a matter of some importance. The conflict is ordinarily stated in polite moral terms of professional ethics and necessary physician-patient relationships. Actually, it seems to contain elements of a struggle between physician and hospital for the control of access to the patient's pocketbook. If medical schools extend direct patient-care responsibilities beyond those necessary for education can they maintain their present relative immunity to attack because they employ physicians on salary? Indeed, should they obstruct the free-market economy by trying to operate hospitals at all?

The dilemma of social action

A sixth and final dilemma arises out of uncertainty about the future role of the university as a social institution and as an agent for social change, for it may be that there is here emerging a new institution comparable in power to the corporation and to government itself. Surely the university role is changing. It has been discovered by corporation and government alike as a source of manpower and consultation. These new demands are often met by a new kind of faculty that is as remote from the classroom as the faculty member who is engaged in basic research. The great pressure to extend the notion of equal opportunity into higher education is rapidly converting all universities to quasi-public status. Particularly has the university been called upon to rationalize between the demands of political expediency and reasoned thinking. The university may be emerging into a role of authority equivalent to that already acknowledged for government, industry, and organized labor. If this be true, then, like government and corporate enterprise, the university may be found to take positions not only on educational matters, but on social action to implement the social utility of those whom it teaches.

Conclusions

I have sketched briefly some of the influences of the medical school on patient care and some of the circumstances of the moment that seem to

affect this role. I conclude that its impact on quality is substantive, but that the possibilities for its effective impact upon the form of administration are much less certain, and indeed I suggest that present entrepreneurial functions may be unsound. Without suggesting that we wish medical education to assign deliberately the medical *Homo sapiens* to genus *Equus asinus*, medical schools have not yet succeeded in equipping physicians to manage matters of patient-care administration. All this may change, however, if the community, in its despair over the conservatism of industry and the expansion of government, assigns to universities a new role in the rationalization of the distribution of human services.

D. Medical Schools and Research in Medical Care

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The need for research into patient care is imperative, and it is the responsibility of medical schools to do such research. To illustrate possibilities, specific results of two recent studies in this field are reported, and their significance for the organization of medical services is analyzed.

DR. GEORGE PACKER BERRY, dean of the Harvard Medical School, in his foreword to *Readings in Medical Care*, makes this statement:[1] "The medical schools are the wellsprings whence will flow the better health of tomorrow. They must constantly adjust their educational offerings for future doctors to the changing conditions and needs of society. . . . Students must learn about the factors that affect the availability and quality of medical care. They need to learn also how to evaluate their experiences and those of others in a number of developing programs such as, for example, health insurance and group practice. Good medicine cannot be practiced independently of the intricate framework in which other health personnel function. The clinical medicine of the future will be indissolubly a part of the future organization of medical service, with all the relevant professional activities, facilities, and financing."

*Based on a paper presented at the Seventeenth Annual Meeting of the Association of Teachers of Preventive Medicine, San Francisco, California, October 30, 1960.

[1] Committee on Medical Care Teaching (eds.). *Readings in Medical Care*. (Chapel Hill, North Carolina: University of North Carolina Press, 1948), p. vi.

Potential and responsibility

To whom is this a challenge? Who should be doing this research? While there may not be categorical answers to such questions, it is suggested that medical schools and universities have an important responsibility in this regard.[2] If the task of the university is to be objective and scientific, and to relate science to social usefulness—in short, to anticipate the future—then surely one area of important research and evaluation activity is that of medical care services. Is this not a field in which the scientific approach needs to be developed much in the same manner, or at least with the same standards, as in the clinical and preclinical fields?[3]

The present scarcity of scientific and technical personnel and the mounting cost of care underline the need to equate high quality of care with a minimum of waste. Medical faculties have a responsibility to demonstrate the best medical care. If they abdicate responsibility and interest in evaluation and experimentation within the medical care setting, whence will come the standards of quality and effectiveness? Because of the orientation and special skills that are usually found in departments of preventive medicine, it is not unreasonable to expect such departments to provide leadership in these activities.

Such research can, however, be conducted in or with other departments. There are often good reasons why this would be more desirable. Clinical departments may sometimes delineate research questions to which answers can be found more readily if the particular skills and orientation found in departments of preventive medicine are called upon. Further, some of those questions may often be better understood or answered if the theory and methodology of the social sciences are made available, at the right time. The function of the social scientist is not limited to being a handmaiden in medical care research. There are important aspects or variables which the social scientist is uniquely qualified to delineate and study. To do this most effectively, he usually needs the cooperation of the medical faculty in order to validate the relevance and significance of the medical care elements in his research.

Medical care research can provide objective guidance for modification and change. The interest and zestfulness of the professor in such research cannot help but have a stimulating effect upon his colleagues and his students. The students can thus more readily learn something of the ways in which the medical care setting may be tested, the methods useful in evaluating its elements, and the indicators and determinants of good medical care. Thus, the future physician is better prepared to appreciate the need for such studies and to participate in them.

What type of laboratory is needed for medical care research? What

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[2] For further discussion on research in patient care see Chapter 3, Section C, particularly the Cornell and North Carolina case reports.

[3] Sheps, C. G. and Taylor, E. E. *Needed Research in Health and Medical Care.* (Chapel Hill: University of North Carolina Press, 1954), pp. 48-64.

type of field data are useful? If the patient is the reason for medical education, then medical care research may and should extend to the patient wherever he may be. As medical faculties increasingly appreciate their need for a variety of medical settings in which they and their students can enhance their understanding of health and disease, and become alerted to the potential of comprehensive and continuing medical care, the opportunities for systematic scientific study of medical care problems will increase. There is much that can be done within the present university medical school complex and its teaching hospital. Outside this orbit, however, there are other important opportunities which are as numerous as the community institutions, organizations, and programs concerned with health problems and medical care. Some illustrations that come to mind are the local community hospitals, specialized hospitals, industrial medical programs, health and disability insurance programs, and certain public health department services.

Research is often crucial to progress in medical care, but it is also unsettling. The generally prevailing concept of medical practice in America is such that it is more disturbing to establish a new way of giving effective care to patients today than it is to discover a new antibiotic. In the latter case, all that happens is that one or more antibiotics fall into disuse and are replaced by the new preparation. In medical care research, replacement means the replacement of certain ways of giving services to which there has been a great deal of commitment on the part of many members of the health professions.

New ideas are best introduced when they are supported by relevant facts. It is the new facts which will emerge from medical care research that are needed. In recent years interest in such research has quickened. A survey of research projects under way in the departments of preventive medicine in 65 medical schools in the United States and Canada in the academic year 1959-60, revealed the fact that 20 projects, out of a total of 251, were in the field of medical care.[4] Significant research is also being conducted by other medical school departments, by other schools in universities, by health departments, and by medical care agencies.

Medical care research in progress or recently completed covers a wide range of problems concerned with who provides medical and allied services, to whom these services are given, their quantity and quality, their purpose, and the degree to which this purpose is being achieved. A possible classification would be:

1. *Health Services Manpower*—such questions as optimum staffing for specific services, educational preparation for specific types of personnel, functional relationships between different types of personnel, factors in the choice of career, adaptations to changing patterns of care, and implications for productivity and administration.

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[4] Shank, R. E., "Research in Departments of Preventive Medicine in the United States and Canada," paper presented at the Annual Meeting of the Association of Teachers of Preventive Medicine, San Francisco, California, October 30, 1960.

2. *Medical Service Needs and Utilization*—such problems as the current patterns of utilization, the determinants of differential utilization by various population groups, the relationship of specific services to disability and work adaptation, and medical care needs resulting from the changing patterns of disease and the natural history of illness.
3. *Development, Operation, and Evaluation of Services and Programs*—such problems as the validity of objectives, measurements of performance, quantity and quality of medical achievement, and relationship of quality of care to such factors as the type of organization and methods of payment.

Two illustrations

In order to illustrate the ways in which medical care research may achieve the goals outlined above, two studies recently conducted in medical schools will be discussed. The first is a study of the referral process.

The growth of useful medical knowledge and the proliferation of a wide variety of specialists inevitably calls for consultation with colleagues and the referral of patients. The effectiveness of this complex process is a crucial ingredient in optimal medical care. Each year 20 per cent of the American population changes its residence. This often creates a need for the responsible transfer of a patient's history and continuing care from one physician to another. The literature provides very little data or insight into the referral process—its frequency, purpose, or outcome. Led by the department of preventive medicine, faculty members of the University of North Carolina have been conducting careful studies of a number of aspects of this facet of medical care.[5] Their data indicate the importance of the referral process by showing that the average general practitioner in North Carolina refers over 200 patients per year to other physicians. Approximately 40 of these referrals are to medical centers.

After postulating the steps in the referral process which are important to the rendering of good medical care, this research group set up a series of carefully designed studies aimed at providing a systematic examination of current practice and experience with each of these steps. The steps being evaluated are:[6]

1. Definition of need for and purpose of the referral; mutlal understanding about these between referring physician and patient.
2. Adequate communication of this purpose and of problems for which help is needed.

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[5] Andrews, L. P., Diamond, E., White, K. L., Williams, T. F., Greenberg, B. G., Hamrick, A. A., and Hunter, E. A., "A Study of Patterns of Patient Referral to a Medical Clinic in a Rural State: Methodology," *Amer. J. Publ. Hlth.* 49, 1959, p. 634.

Williams, T. F., White, K. L., Andrews, L. P., Diamond, E., Greenberg, B. G., Hamrick, A. A., and Hunter, E. A., "Patient Referral to a University Clinic: Patterns in a Rural State," *Amer. J. Publ. Hlth.* 50, 1960, p. 1493.

Williams, T. F., White, K. L., Fleming, W. L., and Greenberg, B. G., "The Referral Process in Medical Care and the University Clinic's Role," *J. Med. Educ.* 36, 1961, p. 899.

[6] Williams, White, Fleming, and Greenberg, *op. cit.*, p. 901.

3. Attention given to these needs and problems by the consultant.
4. Adequate communication of consultant's findings and recommendations to the referring physician.
5. Clear understanding by the patient, referring physician, and consultant of responsibility for the patient's continuing care.

That there are breakdowns in the referral process is to be expected. The studies in North Carolina, however, revealed provocative data on the frequency with which this occurs, in that setting at any rate, and shed light on the problems of differential expectations of patients and physicians and on defects in communication.

In interviewing physicians regarding specific patients they had referred to the medical center, it was found that in only one-fourth of the referrals was there evidence for rather specific definition in the physician's mind of the medical basis for referral. In 40 per cent of cases the referral was made at the patient's request or because the patient was dissatisfied. This particular reason for referral was, however, never stated in the communication from the physician. In 60 per cent of the referrals the physician had not provided any medical information. Regarding the third step in the referral process, the clinic's examination of the patient, it was found that in 83 per cent of instances, among 85 patients studied, the clinic had explored the area of concern to both the referring physician and the patient. In 17 per cent of instances, this area of major concern was not even considered. The data presently available do not make it possible to measure how much the clinic contributed toward resolving the problems. In one-fourth of the cases, it was found that communication from the clinic to the physicians was inadequate—further follow-up letters, which were indicated, had not been sent.

Data regarding the final step—the clear definition of the continuing responsibility for the care of the patient and the adequacy with which the clinic arranged disposition—presented a striking picture. Out of 55 instances in which patients have returned to see the referring physician after their clinic work-ups were completed, and in which physician and patient agreed on their response to this question (there was agreement 78 per cent of the time), only 34 did so—60 per cent. The records of 29 of the patients expected to return were quite clear as to the disposition. Twenty-three of these patients returned for further care. In the records of 26 other patients who should have returned, there was an indefinite statement or none regarding the patient's disposition. Only 11 of these returned. Thus, the likelihood of the patient's returning to his physician was highly correlated with the clarity of his clinic record on this point.

These findings, developed objectively and systematically, provide concrete items for the modification of that particular medical care setting and a baseline for evaluating the effect of such changes. For those who believe that their situation is peculiarly different, a method is provided by which they can find out if that is indeed so. The design of these studies and the systematic delineation of variables provides a framework of understanding for the medical educator, the clinician, and the future physician which

cannot help but assist them to carry out their respective functions in the medical care process more effectively.

The second study, conducted by the department of obstetrics and gynecology of the Downstate Medical Center of the State University of New York, involves the evaluation of an experiment in obstetrical care. This project, though not yet reported in the literature, provides objective relevant data on the effect of early discharge of postpartum patients.[7]

The stimulus for the early ambulation of hospitalized patients can be variously ascribed to a basic change in philosophy or to sheer necessity resulting from severe competition for the use of hospital beds. It is today generally accepted in this country that optimum postpartum care requires an average hospital stay of five days after delivery. There appears to be little scientific evidence, if any, to establish this five-day level as being optimum. Yet, our present standards of care and hospital requirements accept this general practice as "given." In a number of communities, however, available facilities are such that many patients are sent home after only one or two days.

During the period of study all patients discharged within 48 to 72 hours were included as "study patients." A control group, randomly chosen, was retained in the hospital for five days. Nurse-midwives were assigned to make three follow-up visits to each patient—24 hours after discharge, one week after delivery, and three weeks after delivery. A detailed follow-up report was made on each visit. The reports were reviewed at weekly conferences with nursing and medical consultants. There were 1941 mothers and 1973 babies in the experimental group and 316 mothers and 317 babies in the control group. The groups were comparable with respect to important socio-economic variables.

Striking evidence emerges indicating that the early discharge as administered to the experimental group was a relatively safe policy. Advice was given for 72.5 per cent of the babies and 72.6 per cent of the mothers in the experimental group whereas in the control group, advice was required for 62.8 per cent of the babies and 63.0 per cent of the mothers. Early discharge did not, apparently, affect the children adversely. Sixty-four per cent in this group and also in the control group had no complications. Amongst the complications found, infection, diarrhea, and respiratory difficulty were of equal frequency in both groups. As might be expected, feeding problems were slightly less frequent in the five-day group. Rehospitalization of babies was necessary at the same rate in each group—a little over one per cent.

The readmission rate for mothers was 1.9 per cent in the experimental group. In the control group it was 0.7 per cent. Since most hemorrhagic and infective processes of the puerperium occur within the first week of delivery, a higher rate of readmission among the experimental group was to be expected.

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[7] Hellman, L. M., and Kohl, S. G. "Early Hospital Discharge in Obstetrics," to be published in *Journal of Obstetrics and Gynecology of the British Commonwealth.*

These data appear to provide evidence that early discharge accompanied by adequate follow-up is a safe procedure. While these findings don't necessarily command agreement with the implied conclusion, they certainly compel attention. If these results are validated by further studies, if it becomes clear that good quality care can be offered through a shorter hospital stay provided an adequate follow-up service is available, implementation would radically change the framework of obstetrical care. The required complement of obstetrical beds could be reduced by 50 per cent. This would mean fewer hospital days that must be paid for out of pocket or by insurance carriers. For example, in Allegheny County, Pennsylvania, with a population of 1,600,000, this would release 575 hospital beds for other purposes and reduce the hospital bill for obstetrics by three and a quarter million dollars—more than three times the estimated cost of the follow-up service and of the 1.9 per cent rehospitalization.

Research and education

These studies illustrate projects which provide substantive new information pertinent to the organization and provision of medical care services. In addition, the fact that professors in a clinical field deem it important to do such research, to raise questions regarding the framework of service, and to do experiments can be expected to condition at least some of their students to be sensitive to the need for such approaches in the course of their own careers.

The experience of medical students in medical care research, and generally in research done by departments of preventive medicine, varies over a broad spectrum. There are departments where students are excluded from participation in research as a matter of deliberate policy. There are others where there is no direct association but a strong indirect effect. As Dr. John R. Paul has put it, students whose instructor is excited about his research and is "hot on the trail" of something interesting will absorb this enthusiasm by osmosis. Oftentimes the research conducted by faculty members is used directly in the teaching program. Because such instructors must keep abreast of the latest information in the field, they are better able to indicate the trends of development.

Occasionally a research project is used as a teaching exercise through arranging for the participation of students in the field work, for data gathering or in other roles. This is not the same as direct research under close guidance. In some schools, for example, students may plan and execute to completion a specific project which may sometimes contribute to a larger study being conducted by the department.

Medical care research in medical schools exposes the students in a greater or lesser degree to the research approach, to methods of delineating critical variables, to the excitement of new ideas and to examples of the courage and imagination required in the reconsideration of traditional methods and concepts of medical care. There can be very little question that medical schools have an important responsibility in this field.

PART IV

The Interpretation of Institute Outcomes

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CHAPTER 11

Medicine and the Social Contract: Summary and Prospect

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The growth of knowledge, the emphasis on specialism, and factors of social and demographic change have also created changes in the organization of medical services. This is the milieu in whch interrelationships between medical education and medical care occur—the subject matter of this book and of the Institute on which it is based. In reviewing Institute content as revealed in the formal papers, discussion group reports, and other participant commentary, two issues emerge as the basic concern in Institute deliberations: (1) medical care research and service and (2) physicians, families, and the future. One issue neglected by participants may, in retrospect, be considered an omission: physician competence and the need for continuing education. The challenge of international health with its implications for medical care and medical education was considered too broad in scope for Institute coverage.

"THE PRACTICE of medicine," notes one historian, "is . . . a treaty with society."[1] The pages of this volume testify that medical education recognizes an equal commitment. The Teaching Institute of 1960 has been concerned, simply and centrally, with this social contract—its terms, its reciprocities, its purposes, the relationships it implies, and its occasionally painful but increasingly urgent renegotiation.

The urgency is real. It is also, however, misleading. It suggests that the present dilemmas of medicine and the social order are unique, and tends to obscure the realization that the renegotiation of medicine's social responsibilities is periodic if not continual. There have been revolutions before in scientific knowledge, in the practice of medicine, in medical education, and in the distribution of medical care, and it requires no special perspicacity to predict that they will occur again; it is the pace of change, not the fact of change, that is new.

The immediate and specific issues with which this Institute has grappled, likewise, are not brand-new. Twelve years have passed since the Commonwealth Fund asked how we were to "make integrated health service available to people of all social and economic groups, keeping step with them throughout their life span, taking full account of their relation to

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[1] Fleming, D. *William Welch and the Rise of Modern Medicine.* (Boston: Little, Brown and Co., 1954), p. 6.

their environment, both human and physical, and bringing coherence and continuity into their contacts with professional services and facilities."[2] Thirteen years ago, John Ryle observed that "while medicine—through scientific and technical advances—has greatly gained in potentiality . . . it has, in the process, become less surely attuned to some fundamental human needs—to the deeper personal needs of the individual and to the broader social needs of the group or community."[3] In 1947, the New York Academy of Medicine's Committee on Medicine and the Changing Order recognized that "advances in medical science have outpaced the distribution of its benefits" and pointed out that "it is not *the* problem of medical care, but many problems, involving different types of service, distinct groups and localities, varying public attitudes, professional views and scientific standards."[4]

Nor are these issues new to the Teaching Institutes. They have been touched upon before in discussions of comprehensive care, the teaching of preventive medicine, the place of the behavioral sciences in medical education, and similar essentially intramural questions.

What *is* new in the 1960 Institute is that, for the first time, these issues are seen as central. The past quarter-century's social and scientific changes, the social distribution of medical needs and services, the public mandate to medicine, and the anticipation of change itself are focal in education, not merely peripheral factors that happen to infringe upon the world within the ivory tower.

The pressures behind this change in perspective comprise much of the substance of this book. They are, broadly, of two kinds: the explosive growth of scientific and technological knowledge in medicine, and the accumulation of profound demographic and socioeconomic changes that affect both medical education and the structure of medical practice. More than a score of contributors have attempted to outline and document these pressures, to delineate the crucial variables, and to propose solutions of the problems and challenges they raise for medical education. Our task, in this concluding chapter, is to summarize what these authors have said, to scrutinize informal commentary by Institute participants, to search for unifying principles and proposals, and to serve as the Institute's "editorial page" in assessing medical education-medical care relationships.

The growth of knowledge

We have megatons and megabucks; we may yet, helplessly, find ourselves measuring the curriculum in megafacts. The logarithmic growth of scientific knowledge is all too easy to document. There is now more substance in even limited aspects of medicine than can be taught in a lifetime to any one man at a level insuring competence, and if the job were attempted

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[2] The Commonwealth Fund, annual report (1950), p. 13.

[3] Ryle, J. A. *Changing Disciplines.* (London: Oxford University Press, 1948).

[4] *Medicine in the Changing Order,* report of the New York Academy of Medicine Committee on Medicine and the Changing Order (1947), p. 44.

most of the information would be obsolete before the task was done. It may be argued that the rate of increase of knowledge and scientific activity (a doubling time of 15 years) is not quite so formidable as it looks, since much new knowledge serves to condense and simplify, to hang on the peg of lucid principle a disorderly mass of previously unintegrated data. Nevertheless, as Dr. Dael Wolfle observes (Chapter 2), our mechanisms for dealing with the explosion in knowledge—and its social utilization—are breaking down. In consequence, medical education is ever longer and more expensive, and medical diagnosis and treatment more complex, costly, and hospital-based, though considerably more effective. The pursuit and transmission of new knowledge now require elaborate subsystems of full-time teachers and researchers, which in turn drain physicians from the pool of practice. One inevitable and only questionably deplored consequence is specialization. The new knowledge has changed the age distribution of the population, the patterns of its diseases, and the level of its expectations; the new specialization has limited the utilization of physicians and fragmented the individual patient.

Social and demographic changes

The social concomitants of the scientific revolution, in the world beyond the doors of the medical school and the teaching hospital, are still more startling. The social and demographic changes significant to medicine need no extensive review here. In the United States, the numbers of those over 65 years of age have quadrupled; there is less acute and infectious disease and more chronic disease, less death and more disability. In chronic disease, there is less present possibility of cure and greater need for prevention and early diagnosis. While there is increasing reliance on technical, hospital-based procedures, there is an increasing need for comprehensive therapies that are more than narrowly "medical" and involve many disciplines, many facilities, and many settings, including the patient's family and community. The use of hospitals and of physicians seems to have its own doubling time. There has been an explosion in the growth of paramedical personnel—a 3,960 per cent increase in the number of nurses in the past half-century, for example. Yet the ranks of physicians have increased more slowly and become more specialized. Personal income is up and its distribution has broadened. Health insurance coverage, though still seriously inadequate in many respects, has expanded greatly and has enlarged the scope of diagnosis and therapy for huge segments of the population. Medical care expenditures are increased, the so-called charity or service or teaching patient is disappearing, and indigency is, at the least, undergoing redefinition.

The organization of services

The medical student, the intern, or the resident in teaching hospitals today works in settings that arbitrarily separate acutely, chronically, and

mentally ill patients without regard for their real needs for care and at a staggering cost in duplication of staff and facilities. The patients of the physician-in-training come from an increasingly limited spectrum of socioeconomic origin and disease pattern. It is almost impossible for him to follow the patient out of the hospital and into home and community, or even to work consistently with others in setting up complex patterns of treatment and service that might integrate hospital and nonhospital treatment. The student's training, rooted largely in technical complexities, loses touch with reality in that it may selectively make him unfit for the medical problems and limitations of practice; at the same time physicians on the outside, who are excluded from the environment of the teaching hospital, progressively lose touch with medical science. Much of the young M.D.'s subsequent experience in practice will be in ambulatory medicine, but the facilities and academic environments of the outpatient departments and emergency wards in which he works during training are often totally inadequate, isolated both from in-hospital experience and from the community.

These failures in sheer quantity, organization, and diversity of service have consequences, as well, for medical and epidemiological research. With the disappearance of the classical service patient, teaching hospitals desperately lack a new reservoir of teaching material. The medical school-teaching hospital setting does not lend itself easily to longitudinal studies on defined populations, though these are just the kinds of studies needed in research on perinatal mortality, aspects of aging, mental illness, and other unsolved etiological problems too numerous to mention and too important to ignore. Neither is it possible, in the confines of ward and laboratory, to explore the influence of social, behavioral, or environmental factors in the etiology or therapy of disease.

For the patient, finally, the consequences are often tragic. He knows that scientifically competent and often highly effective medical resources exist; yet somehow he cannot find them. The worsening physician-to-population ratio makes them increasingly unavailable to him. Specialization sends him on a round of costly, unintegrated, and unsatisfying examinations and explorations. Hospitalization, even the utilization of hospital facilities on an outpatient basis, may thrust him into a frustrating maze of institutional complexity. He faces choices among the services of a growing array of technicians and paramedical personnel, whose roles and functions may be unclear and apparently unrelated to his needs. And his treatment, finally, tends to become ever more episodic, ever more impersonal, and ever more in conflict with the needs of family and other social aggregates in which he lives.

Challenges to the Institute

This is the world this Institute describes. In the process, it also defines a series of challenges. How is medical education to develop physicians for the practice of the 1970's and 1980's and beyond? Granted that a simple

increase in the numbers of physicians is no answer, how shall the medical schools attempt to increase the quality, vary the roles, and change the training of their students? Are the changes and experiments in medical education today relevant and appropriate to the predictable problems of the future? Can medical schools and their teaching hospitals contribute to thought and research on medical care—indeed, is it their proper function or obligation to do so? Should they associate themselves with new experiments in the organization of medical care—group-practice plans, prepaid comprehensive-care plans, and the like? If, in search either of new patients or new knowledge, they assume responsibility for the health services of a defined community, what will happen to their relationships with organized medicine? And will they be able to balance apparently conflicting service and educational interests? If they change the form of service in the teaching setting, will they lose control over its content?

It is significant that these issues are just as social as they are medical or educational. It is entirely predictable—given the nature of medical educators, the stickiness and complexity of the specific problems, the wide variety of proposals, and the tendency of such phrases as "the social responsibility of medicine" to mean all things to all men—that the reports of Institute discussion reflect substantial and often heated disagreement among participants. Yet they also reflect a striking unanimity, at least on the nature of the central issues. This unanimity may not have been apparent in the day-to-day sessions of the Institute, but I believe it has a very considerable bearing on the answer to that simplest and most important of questions: Where do we go from here?

At the risk of oversimplification, I suggest that the Institute really dealt with only two issues and their attendant controversies: the relationship of medical education to medical care research and service, and the preparation of "family physicians" (and, by implication, other physicians in general) for the practice of the future. In retrospect it might be noted that although the Institute discussions showed some lacks of awareness, which might even be considered serious omissions, it was never intended that all ramifications would receive complete coverage.

The first issue: medical care research and service

The failures and the problems documented so amply at the 1960 Teaching Institute are failures, primarily, of the application and utilization of existing knowledge in a changing social setting—because we don't know how to do so and have not bothered (as educators, physicians, and scientists) to find out. This is a serious charge, and not everyone agrees with it. Yet over and over again the call is sounded for medical education. In Chapter 10, Section D, it is stated that medical schools and universities have an important responsibility in the delineation of problems and in research on medical care; to relate science to social usefulness, to anticipate the future. Research in medical care and service, it is argued, requires the development of a scientific approach, like that in basic and clinical research;

it requires the use of scientific methods in evaluation and experiment, and the establishment of standards of quality of care. Again, "medical faculties cannot abdicate responsibility for evaluation and experimentation with the medical care setting," and "medical schools should accept responsibility to explore new patterns of practice." Teaching centers have made almost no contribution to the development of new forms of service organization—the development of national health services, of group practice, of prepaid comprehensive-care plans; they are at present doing little to integrate hospital, outpatient, and community resources; they are thus blocking important and needed epidemiological and etiological research, for many current medical problems (the management of the disabilities of the chronic sick, for example) are insoluble within the present pattern of practice. In short, medical education must respond to social change, *teach* the factors involved in the quantity and quality of medical care, evaluate new experiments in the application of knowledge, and produce practitioners who are intimately and scientifically concerned with the setting, framework, and organization of their services.

Specific tasks are set. Medical school studies should be undertaken within the schools, in teaching hospitals, in community hospitals, in public health departments, in defined population groups, in group practices, in industry. Manpower needs—optimum staffing and training, the relationships of varied personnel, and the determinants of career choice—must be explored. Service needs must be analyzed, including the patterns of use of medical and hospital and domiciliary services, the determinants of use by varied population groups, and the needs resulting from changing disease and social patterns. Since, for the first time, the costs, quantity, and quality of medical care under different organizational arrangements can be determined, researchers should be exploring the number and types of physician visits, hospitalizations, operations, days of stay, etc., as well as their contribution to therapeutic success or failure. Students must be trained in the methods appropriate to these problems and helped to understand their relevance to the more orthodox "scientific" content of medicine.

It is when an apparent corollary of this argument is advanced that substantial disagreement appears. The corollary is that medical school responsibility extends beyond research, and the development or evaluation of medical care programs, to the operation of such programs; that schools should become involved in direct service programs providing health care for a whole group, through affiliation with labor groups, group practice prepayment schemes, and the like, or by simply accepting responsibility for all medical services for an entire community or for some defined population or area within it. Thus, it is argued, the schools will solve their needs for an adequate supply of teaching patients. They will, at last, have the community as laboratory. They will simultaneously be able to explore and demonstrate to students and the profession the patterns of practice most consistent with current medical knowledge, and to promote neglected subjects and methods of research. They will be able to evolve new, integrated, multipurpose teaching hospitals within which medical and para-

medical personnel may be used in new ways, or new types of personnel developed. They will be able to emphasize preventive medicine, family care, comprehensive care, outpatient and ambulatory medicine, and continuity of care through community resources, thus fitting their students for the practice of the future.

It is in response to this network of proposals and claims that a substantial number of Institute participants warn of a conflict, real or anticipated, between education and service. Although they recognize the utility of research, the need for teaching patients, and the opportunities and social obligations represented by service programs, they fear specifically that "basic educational principles will be compromised or abrogated" in the face of ever-growing consumer demands for service, that mere technical training will supplant creative education, that education will disappear as the primary purpose of service responsibilities, that teachers and researchers will be overburdened, that faculties will lose control of hospital appointments and standards, and that new knowledge will become less important than new dollars.

There is, in these arguments, not only a real and legitimate fear—based, it must be added, on past experience—but also a perception of service and educational objectives as almost inevitably in conflict. One Institute participant writes:

> Medical education must compromise, but such compromise does not mean that the educational program should be subservient to any of its allied parts. If the objective of a program is to keep a city council happy because not much money is being spent and because patients are not complaining about services, the program is not educational. If the objectives of the program are measured in terms of the number of patients seen, the number of laboratory tests performed, and whether or not there is an operating deficit, the program will not be educational. If the objective of the program is to permit the members of the staff to have evenings and week ends free, because there are adequate numbers of interns and residents available, the program is not educational. Moreover, if the objective is to tote up the dollar volume of research grants obtained, the program is not educational. If the service demands are adapted to an educational curriculum with time for study and communication between teacher and student, if the research is carried on in a spirit of inquiry, and if the service to patients is of the highest possible quality *without compromise,* then the program may be considered educational.

As a compromise of a different sort, one suggestion is made that the medical school and its teaching hospital withdraw, in effect, from the crushing and potentially dangerous burden of community medical care and a service load dependent upon high-occupancy economics and competition with private practice. Instead, it would establish a separate institution—or at least a separate branch of the teaching hospital—which would be a "universital," a hospital with a uniquely educational function akin to the research function of the Clinical Center at Bethesda. In this setting, it might serve a prepaid group practice and explore the teaching of ambulatory medicine without being mired in patient care.

It seems to me that three observations on this issue must be made. The

first is that the corollary—the assumption by medical schools of responsibility for the operation of group-practice, consumer-group, or community-as-laboratory programs—does not follow irrevocably from the obligation of medical schools to undertake major and pioneering research in medical care problems, though it may be desirable in its own right. There is a real danger that criticism of the corollary will compromise or delay the necessity of teaching and research in medical care. Regardless of the nature of the clinical framework, some research in the field can be done.

Secondly, it is not at all clear that service programs and educational programs tend so inherently to be in conflict, and there is reason to suspect that this perception reflects a broader difficulty of educators in defining their own roles and their social responsibilities. In an admirably synthetic series of observations, Dr. James P. Dixon (Chapter 10) identifies the service-versus-education controversy as a species of the more general dilemma of content and form. *Education* involves the content, the scientific knowledge and habits of thought transmitted in medical school and teaching hospital; *service* involves the form, the organization of medical services in which that knowledge is applied. Medical schools, Dr. Dixon observes, are not now equipped to teach the student how to administer medical care, or how to deal with its economic, political, and social aspects; yet they fear that the involvement of government, or labor, or simply the pressure of service loads in the form of organization of services will somehow destroy the professionalism of the content.

The problem is demonstrated most acutely by the dilemma of cost. If a school discovers that in order to maintain its teaching existence, or to serve a community function, it must take responsibility for a patient-care program, it must somehow find the money to do so. Obviously, education is more important than money, and teaching must not be cramped by the financial limitations of service. Yet the physician himself—though now taught almost nothing in medical school about the economics or organization of care—controls many of the major elements in the cost of care. The conclusion (and this is what Dr. Cecil G. Sheps and Dr. Thomas McKeown really are arguing so vigorously in Chapter 1 and Chapter 6) is that form is itself a legitimate and major aspect of the content of a medical education. There is, in this view, no essential difference between research in patient-referral patterns and research on protein synthesis, or between the operation of a community-laboratory program and the maintenance of a metabolic ward. The evidence of experimenters in social psychiatry and milieu therapy clearly demonstrate that the organization of services may be a significant aspect of their therapeutic content and effectiveness, and the same would seem to be true, for example, in the medical treatment of alcoholism.[5]

This service-education or content-form dilemma may represent a more general and serious problem of educational institutions. Increasingly,

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[5] Stanton, A. H. and Schwartz, M. S. *The Mental Hospital.* (New York: Basic Books, 1954).

Dr. Dixon observes, the community may make the university itself an agent of social change, with a role in the rationalization of the distribution of human services and a responsibility not only for education but also for making decisions or taking social action to implement the social utility of the matters it teaches and explores. If this is so, then medicine —that most social of sciences—is sure to be involved early and deeply.

Thirdly, it seems unlikely that the real nature of the service and education dilemmas will be understood, or that the conflicts will be resolved, until at least a few medical schools have the courage and the wisdom to undertake the suggested experiments in research and in service affiliations. As the terms of the dilemma sharpen, the need for data grows.

The second issue: physicians, families, and the future

It is apparently an article of faith among most Institute participants that the family physician exists and is important today, that he will be a key figure in the medical practice of the future, and that his role places crucial obligations on the medical schools. I have called this an article of faith because there is so little current data to support the concept. We simply do not know what the family physician is now, how he is used by the public, how his role—if it currently exists—is seen, and what fraction of the total of medical services he provides. Freidson has recently provided evidence that the idea of a family physician is an article of faith in another sense—as an item of folklore, operating powerfully in the evaluation of physicians even by those patients who have never had a family doctor.[6] Although better than 70 per cent of United States residents, in sample after sample, say "yes" when asked if they have a "family doctor" (again, the term is not defined), a high proportion of these same respondents also report that they regularly consult pediatricians, obstetricians, and others. Is the family physician, then, someone who provides service to families in the purely demographic sense? In some larger sense? Is he a personal physician? A general practitioner? And what is the operational meaning of these varied definitions?

The same cloudiness and diversity are found in this Institute's discussions of the personal, or general, or family physician of the future. We are told that he will "see the patient first and be a diagnostician, evaluator, and analyst of data . . . a counselor of the patient . . . relying heavily on specialists." His function will be "the general supervision of health and medical care, preventive medicine, the treatment of minor illness, the practice of minor surgery and perhaps normal obstetrics, the screening of patients for early manifestations of severe and chronic illness." He should understand "the supervision" of ambulatory or hospital patients whose actual medical treatment is in the hands of a series of specialists. He will

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[6] Freidson, E. *Patients' Views of Medical Practice.* (New York: Russell Sage Foundation, 1961).

assume "comprehensive and continuing responsibility for the patient and his family regardless of age," though his training will be sufficient only to enable him to understand the "general diagnostic and therapeutic principles," rather than the details, of pediatrics, obstetrics, and other basic specialties; yet he will "manage chronic illness and rehabilitation." He will be a "diagnostician" and a "health counselor" who will "promote health."

His training, it is variously suggested, should be divested of the scientific details and overly thorough exploration of basic medical disciplines that might be appropriate for researchers, scientists, or specialists (the terms are frequently and improperly used as if they were synonymous); yet he will have enhanced clinical acumen, at least in the early diagnosis of chronic illness. He will be grounded, furthermore, in an understanding of medical economics, health insurance, and the organization of medical care. He will have either a rotating internship and a mixed residency, or a special hospital training program including medicine, minor surgery, obstetrics, and ambulatory medicine. He will be "the key figure" in the comprehensive-care, preventively oriented, prepaid group practice of the future, and in this setting, flanked by specialists, he will practice optimally.

Some of the same uncertainty is reflected in those aspects of current curricular innovations (Chapter 3) that involve family clinics, training for family practice, and comprehensive care. There is little to suggest that these programs do, in fact, involve whole families (as opposed, for example, to mother-and-child care) or offer effective teaching on the analysis of families—the roles and relationships of family members, the typologies of family structure, the systematic examination of the family unit in its physical, biological, and social environment—in specific relation to the etiology, distribution, course, or prevention of disease. These comments are not intended to deny the revolutionary opportunities that may be represented by real family practice and family-centered teaching; hopefully, instead, they will serve to emphasize Dr. Samuel P. Martin's call (Chapter 4) for extensive further research in all three areas—curriculum content, the organization of teaching services, and the utilization of physicians—that are involved.

Significant findings are already available to us. No discussion of the training of physicians for new roles should be conducted without reference to Koos' studies of the perception and utilization of doctors by the people of Regionville.[7] Solon, Sheps, and Lee have begun to trace the patterns of utilization in an urban hospital population and have offered the concept of "central source of care."[8] No planning for postgraduate training should be conducted as if Hall had not already outlined the real stages of the medical career in the professional world of the urban community, or as if Menzel and Katz had not already studied the determinants of

[7] Koos, E. L. *The Health of Regionville.* (New York: Columbia University Press, 1954).

[8] Solon, J. A., Sheps, C. G., and Lee, S. S., "Delineating Patterns of Medical Care," *Amer. J. Publ. Hlth.* 50, 1960, p. 1105.

innovation and change in the actual treatment of patients.[9] Studies in New York and North Carolina are yielding clues to the public's perception and understanding of the roles of specialist, nurse, and social worker. Without further explorations in this field, and thoughtful interpretation of the results, there is a serious risk that proposals to create new types of physicians, or to increase the roles and skills of paramedical personnel, will produce medical workers trained in inappropriate methods for the treatment of types of patients who do not exist or do not want their services.

This observation is in fact a powerful additional argument for the assumption by medical schools of responsibility for defined populations in the community. In the present scheme of things, families as units are not ordinarily accessible to teaching hospitals, although every individual family member may at one time or another be a patient. There is thus little opportunity to learn or experiment with the real nature of family practice; lacking this, discussion of proposals to train a new breed of family physicians is likely to be both fruitless and endless.

The natural history of incompetence

The discussion of medical education's responsibilities for meeting the medical and social needs of the future must begin with an examination of the problems of today. Yet on one of these this Institute is strangely silent. For five years, evidence has been available to suggest that the actual medical performance of a significant number of American physicians is, within a few years of their departure from medical school and postgraduate training, grossly unscientific and dangerously close to incompetence.[10] The significance of these studies is not in their descriptions of the real quality of practice; every house officer in every teaching hospital, tracing the ministrations of some local physicians in patients' histories, has had reason to suspect it, and most medical educators are still properly and acutely aware of the deficiencies of practice in the community. What is important is the demonstration of the magnitude of the problem and the opportunity to isolate and define the variables—in personal characteristics, in age, in type of training and postgraduate training—that make for good or poor performance in subsequent years; in short, to trace the natural history of competence and incompetence in the career of the physician. This subject did not come up in the Institute discussions, and it is mentioned only twice in this book, both times in relation to medical education, though its implications are wider than that. There is something

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[9] Hall, O., "The Stages of a Medical Career," *Amer. J. Sociology* 53, 1948, p. 327. Menzel, H., and Katz, E., "Social Relations and Innovation in the Medical Profession: The Epidemiology of a New Drug," *Publ. Opin. Quart.* 19, Winter 1955-56, p. 337.

[10] Peterson, O. L., Andrews, L. P., Spain, R. S., and Greenberg, B. G., "An Analytical Study of North Carolina General Practice 1953-54," *J. Med. Educ.* 31, December 1956, Part 2.

unreal, for example, about extended discussion of the cost of medical care and services that makes little mention of the social and financial costs of ineptitude and incompetence. Dr. Peter V. Lee's comments (Chapter 3) constitute one of the unanswered challenges to the Institute, and they deserve repetition here:

> Are we not concerned with the apparent discrepancy between what we profess and what we practice? Are we not shaken by the fact that "good" students from the "best" schools perform no better after several years in practice than "poor" students from schools with the least reputation? Are we not even willing to test whether or not Peterson's methods were valid by designing additional studies to determine, among other things, whether the poor practices he observed are in fact detrimental to patients' health? Are they differences that make a difference? This, then, is an area close to medical education in which I see serious unmet needs: the examination of the quality of medical care and of the validity of the assumptions we now make concerning the basic, scientific preparation for medicine in our medical schools.

International health

There is perhaps another proper concern of medical education that should be mentioned here, for it could not receive attention from the 1960 Teaching Institute. This is the area of international health. The world with which tomorrow's physicians must be prepared to deal does not exist solely within the geographical borders of the United States. The challenge represented by international health needs, and those of the developing nations in particular, is more than a moral obligation; it is an opportunity that is especially germane to the issues under discussion. International health represents, for medical education, almost unlimited opportunities for experimentation in patient care, for the development of new types of organization and structure of services, for the training of new kinds of medical and paramedical personnel working in new roles and relationships, and for studies of the relationships of culture and social structure to disease. We have talked at length of the community as the laboratory of medical education and teaching in the 1960's; hopefully, by 1970, we may not find it too grandiose to think of the world as laboratory.

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APPENDIX A

Organization of the 1960 Institute

The 1960 AAMC Teaching Institute, Medical Services and Medical Education: Today and Tomorrow, was held November 1-3, 1960, at the Diplomat Hotel, Hollywood Beach, Florida. It was preceded by careful and extensive planning, as described by Dr. Carlyle Jacobsen, Institute chairman, in the Introduction to this volume. The members of the Planning Committee and the two subcommittees are listed on the organizational-roster page following the title page.

Participants from each medical school in the United States, Canada, and Puerto Rico, plus those from the medical schools at American University of Beirut and University of the Philippines, were in attendance. Including the guest speakers, other specially honored guests, and members of the Committee on Research and Education, a total of 139 individuals attended the general sessions and participated in the small-group discussions. All participants came to the Institute with ideas, problems, and questions supported by a background of study material prepared for their use—particularly the workbook entitled *The Dynamics of Medical Care*, much of which is incorporated in this book. All participants brought away from the Institute their own evaluation of Institute content, which—in the tradition of all the Institutes—they shared with colleagues at home.

This book has grown out of Institute actions and reactions, but its nucleus is the Institute program itself, so thoughtfully developed by the planners. It is reproduced immediately below as it occurred at Hollywood Beach.

Tuesday afternoon, November 1

General session (joint session with AAMC Annual Meeting)

INTRODUCTION TO THE 1960 TEACHING INSTITUTE

Dr. Carlyle Jacobsen, *Chairman of the Institute*, President of the Medical Center and Dean, State University of New York College of Medicine (Upstate)

LIMITATIONS OF MEDICAL CARE ATTRIBUTABLE TO MEDICAL EDUCATION

Dr. Thomas McKeown, Professor of Social Medicine, University of Birmingham Medical School

THE RELATIONSHIP OF GROUP PRACTICE PLANS TO MEDICAL EDUCATION

Dr. David P. Barr, President and Medical Director, Health Insurance Plan of Greater New York, and Professor of Medicine Emeritus, Cornell University Medical College

THE WORLD AROUND US—PROBLEMS, PRESSURES, PROSPECTS

Dr. Cecil G. Sheps, *Chairman of Subcommittee I,* Professor of Medical and Hospital Administration, University of Pittsburgh Graduate School of Public Health

Wednesday morning, November 2

General session: The Expanding Body of Scientific Knowledge—Implications for Medical Education and Medical Care

INTRODUCTION

Dr. George A. Wolf, Jr., *Chairman of Subcommittee II,* Dean and Professor of Clinical Medicine, University of Vermont College of Medicine*

THE IMPLICATIONS OF SPECIALISM FOR UNIVERSITY EDUCATION

Dr. Dael Wolfle, Executive Officer, American Association for the Advancement of Science

PHYSICAL AND BIOLOGICAL SCIENCES

Dr. Frank L. Horsfall, Jr., President and Director, Sloan-Kettering Institute for Cancer Research

SOCIAL AND PSYCHOLOGICAL SCIENCES

Dr. Stewart G. Wolf, Jr., Professor of Medicine and Head of the Department, University of Oklahoma School of Medicine

DISCUSSION GROUPS

Wednesday afternoon, November 2

General session: Some Social Forces Affecting Medical Education and Medical Care

INTRODUCTION

Dr. Cecil G. Sheps, *Chairman of Subcommittee I,* Professor of Medical and Hospital Administration, University of Pittsburgh Graduate School of Public Health

EXPECTATIONS OF ORGANIZED LABOR AS A CONSUMER GROUP

Mr. Leonard Woodcock, Vice-President of the International Union, United Automobile Workers, and Chairman of the Board of Governors, Wayne State University

INFLUENCES OF VOLUNTARY AND GOVERNMENTAL HEALTH AGENCIES IN FORMULATING THE TASK OF OUR MEDICAL SCHOOLS

Dr. Jonathan E. Rhoads, John Rhea Barton Professor of Surgery and Chairman of the Department, University of Pennsylvania School of Medicine

*At present Dr. Wolf is Vice-President for Medical and Dental Affairs, Tufts University School of Medicine, and Executive Director, Tufts-New England Medical Center.

The Role of the Medical School in Rendering Patient Care
Dr. James P. Dixon, President, Antioch College
Discussion Groups

Wednesday evening, November 2

Two Medical Curricula—A New Proposal
Dr. David D. Rutstein, Professor of Preventive Medicine and Head of the Department, Harvard Medical School
Discussion opened by:
Dr. Samuel P. Martin, Professor of Medicine and Head of the Department, University of Florida College of Medicine

Thursday morning, November 3

General session
Introduction
Dr. Carlyle Jacobsen, *Chairman of the Institute,* President of the Medical Center and Dean, State University of New York College of Medicine (Upstate)
Organized Medical Services and the Common Law
Mr. John F. Horty, Director of the Health Law Center, University of Pittsburgh Graduate School of Public Health
Discussion opened by:
Dr. Robert A. Moore, President of the Medical Center, Dean, and Professor of Pathology, State University of New York College of Medicine (Downstate)
Contrasting Roles and Needs of University and Community Hospitals
Dr. Joseph C. Hinsey, Director, New York Hospital-Cornell Medical Center, and Professor of Neuroanatomy, Cornell University Medical College
Discussion opened by:
Dr. Philip D. Bonnet, Administrator, Massachusetts Memorial Hospitals, and Associate Professor of Hospital Administration, Boston University School of Medicine

APPENDIX B

Roster of Participants—1960 Institute

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